The Dental Digest.

Vol. IV. CHICAGO, JUNE, 1898. No. 6.

Original Contributions.

USE OF AN INTRADENTAL BAND.

By B. J. Cigrand, D.D.S., Chicago. Read Before the Iowa State Dental Society, May, 1898.

Recent cyclopedias and writers have conferred upon the word dentistry a new and appropriate definition, limiting its province to the art and science of treating diseases and lesions of the teeth, and supplying artificial substitutes where natural ones are missing. All present will agree that this specification embraces a dominion sufficiently large to afford activity to even the most latent talent of man. The operation of extracting a tooth, the removing of necrosed maxillary bone, or kindred operations distant from the teeth, do not come within the scope of the true meaning of dentistry, but belong to another division of the science of medicine and must be classed with such operations as are not intended to save dental organs and their immediate surroundings, and fall within the specialty of oral surgery. Many of our journals and some few of our dental textbooks are accepting this view of the word dentistry, and I am of the opinion that in the near future the words "dental surgeon" and "oral surgeon" will be employed with more decisive meanings.

Dentistry has come to be registered in the dictionary of humanity as a synonym for the following five words: dental—preservation, restoration, regulation, affixation, and substitution. This quintet completely embraces the innumerable operations and treatments which we as practitioners of dentistry are called upon to perform, and includes the various mechanisms which are employed in the correction and construction of all appliances used in these processes.

Dental elimination or extraction of teeth—the antonym of dentistry—has been placed within the realms of oral surgery, and is not a part nor has it any relation with the true meaning of dentistry, which if it means anything must stand for a purpose diametrically the opposite.

No less than five of our most recent dictionaries, and nearly all

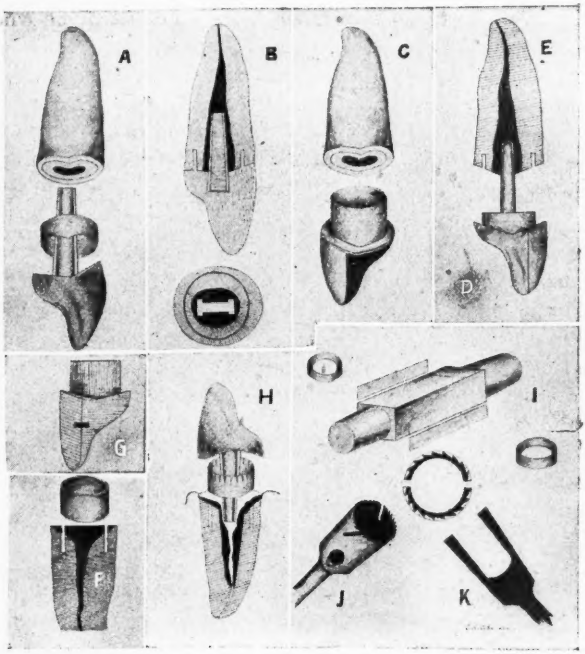
of the dental text-books which have come from the presses since the Columbian Dental Congress, have placed this construction on the word dentistry, and it is to be hoped that in the very near future we may have not only a clear understanding of the word, but our literature may be crystallized into a medium of mental exchange, so as to be a channel through which we may safely send thoughts on any subject pertaining to our vocation without fear of misconception. In every calling we are conscious of a needed change, and when we shall have effected a complete system of dental nomenclature we can be reasonably certain that more rapid progress in our special field of medicine is assured. While we are all anxious for this day to arrive, we can contribute our quota towards effecting this grand result by lending such assistance as is possible and communicating our deductions to the various committees who have the nomenclature of the profession in charge.

Since there is not at present an accepted terminology in any of our divisional specialties, it is our right and opportunity to enter into the coinage of new words or classification of the old or modification of either, but it is with some reluctance that I present to your attention the words "intradental" and "circumdental" bands, and in relation to them some few other terms. As there were no words in our dental vocabulary which even approximately covered the ideas involved, I searched about and finally decided that these compound words would clearly designate the purpose of their dental use.

Dental surgery may be divided into two grand divisions, namely, the branch of prosthesis and the branch of aphaeresis. The former means to add, to restore, to replace, or to affix; accordingly it implies nearly all dental operations, since for little else is the dentist called upon; while aphaeresis denotes to take from, to omit, to remove, to subtract or to sever.

As dental surgeons we are interested in both these branches; but as dentists we are concerned mostly in the prosthetic, since the major portion of our work is of a strictly prosthetic character. But in order to accomplish prosthetic results our initial work must inaugurate the aphaeretic branch. In the preparation of a cavity for gold we labor in an aphaeretic sense, in that we remove defective enamel and dentin. If we crown a root we again resort to the same branch, when we trim down the cervical borders and shape the joint-end, and when we fill the pulp-chamber and canal we likewise engage in

aphaeretic art, in removing the pulp. But this is only partial aphaeresis, while the complete indicates that the tooth or teeth have been extracted. And it is the purpose of my paper to advocate dental prosthesis in its fullest meaning, and I hope to emphasize that as dentists dental preservation is our distinctive function, that before resorting to the use of aphaeretic tactics we must have exhausted



our complete supply of prosthetic devices; and I intend to give a method whereby the most hopeless root can be restored to usefulness in retaining some form of dental substitute.

Too many of our practitioners employ the forceps unnecessarily. It is a deplorable fact that too frequently the lateral or first bicuspid roots are extracted, and a tooth supplied by some system of bridge-work, as it is generally called, cutting down the sound adjoining teeth, collaring them with gold, when it was within the art of prosthesis to save the root and place upon it an individual crown, such

as would afford the natural denture with a hygienic substitute, and in concord with physiological laws.

Nature dislikes to be tied up, bound or confined, and the present systems of bridgework, with their yokes of gold, chaining and enslaving one tooth to the other, is contrary to nature and works ill-results. More especially so when the load is unbearably large, as in the case with the mammoth attachments, carrying five and even six artificial teeth upon two natural roots. How much better to save the roots of such laterals and bicuspids, build them up and give nature the right to ask assistance when occasion demands, and let her return the compliment when opportunity presents. The individual tooth as nature supplies it is free from immediate support, the neighboring teeth approximate but are in no sense attached; they lend one another strength in that they are positioned in an arch which demands that at the contact point each tooth shall touch its immediate neighbor, and the teeth are so arranged that a strain which falls on any one tooth of either half of the superior or inferior dental arch is communicated to the several teeth on that side of the jaw, thus distributing the strain. In some mouths there is considerable space between the dental organs and their approximal surfaces do not come in contact, and in these mouths the alveolar ridge and maxillary bones are well developed and hold the isolated teeth firmly in position. But the teeth as we generally find them, and as they normally ought to be, are slightly in touch, yet each as independent of its neighbor in its functional character as though the masticating apparatus consisted of but a single superior and two inferior teeth or vice versa. To avoid applying bridgework in every instance when we can, and insert individual crownwork instead, should be the earnest and indefatigable effort of every member of the profession.

The intradental band, as I have chosen to call this method of restoring and strengthening roots which are about to carry full or artificial crowns, can be employed to good advantage in many of the prosthetic dental appliances; and though I shall mention in this paper some of the more important uses which it has, it shall be my real purpose to confine myself to its merits as a factor in building up and strengthening roots which seem hopelessly decayed and suggest the use of the forceps.

The band, as its name implies, is placed in the tooth substance

immediately within the cervical circumference, and in partial crown-work at a point midway between the cusps and the neck of the tooth. The width of the band depends entirely upon what process of dental retention is desired, but in most cases it is seldom more than an eighth of an inch wide and generally made of gold or iridio-platinum, about 30 gauge. The band in all instances is anchored into the root by means of cement, and need not necessarily form a part of the crown proper, but may be set independent of the latter.

The instruments for accomplishing these effects are simple and their application readily understood. The set or system consists of two trephines of sizes usually desired for banding the ten anterior teeth, and a gauge-mandrel which has two stumps the exact complement of the trephines. If it is intended to band a root of the size of the large trephine, the gauge-mandrel indicates on its side nearest the large stump the exact size of the gold necessary to fit the selected trephine. The trephine is so constructed that the face of it is slightly larger than its body; this allows the instrument to cut without pinching; it has two large slots in its circumference, admitting of the steel yielding in the event of uncertain leverage; and the teeth of the trephines are modeled after those of the log-circular-saw, and the small grooves leading from the teeth permit the saw-dust to escape without clogging the instrument. It requires but a few revolutions of the trephine to effect a perfect intradental groove. Figs. I, J and K.

The ferrule which all operators now produce, and which surrounds the necks of the teeth, I have designated as the circumdental band, such as we have in the Richmond Crown. Practitioners have recognized long since that the circumdental band is not an ideal appliance and that it has features which make it undesirable, and among these demerits we mention that it constricts the intradental space; that it impinges on the living tissues; that it is unsightly and contrary to dental esthetics; that it induces pain, that it is too easily broken; that it quite generally affords lodgment for food, and in turn harbors pathogenic organisms.

There is a maxim in general mechanics that "a chain is no stronger than its weakest link," and this is most applicable to the construction of crowns. Notwithstanding that the Richmond crown is an esthetic dental appliance, there are innumerable defects which induce us to look about and design new ideas, in the fond hope of

obtaining a crown which may approximate nature and yield hygienic and physiological results equal to the demands.

In assembled-crowns, as I prefer to call bridgework, we must admit that the Richmond occupies a place which cannot be substituted by any of the several crowns now in use. This fact is due primarily because it is a combination crown, constructed of porcelain and gold, the latter acting as a medium to which can be readily soldered the adjoining artificial teeth; but I am of the opinion that porcelain dental art will in the near future be in full possession of the domain now controlled by it.

For individual crownwork I am becoming more convinced each day that the Logan is the nearest representative of nature, and when it is attached by the method I here suggest it cannot be other than a most excellent dental substitute.

I fully recognize that it requires no small amount of courage to assail the Richmond crown, since it is quite established in dental mechanisms, yet a sense of conscientiousness impels me to say that I am losing faith in it for individual restoration. Other operators present will, I hope, candidly acknowledge their adverse experiences and freely and fearlessly criticize my paper, since it has been written with a view of learning from the practitioners here assembled the true status of crown-prosthesis in Iowa.

In setting the Logan with the intradental band, you first trim down the root, Fig. A, up to the alveolar process, and then proceed to grind and adjust the crown to the root. Then select the proper size of trephine, place same in the handpiece, and with a few rapid revolutions of the trephine the intradental groove is produced. Now make a gold band complementing the respective trephine-stump on the gauge-mandrel, and after soldering the band and trimming off the rough portions, you are ready to set the band with cement. But before setting same it is well to put a plug of cotton in the root-canal to prevent the cement from filling up the canal while attaching the band. Mix the cement to a creamy consistency, add cement to the two surfaces of the band, and register it over the trephine groove, then press it home, Fig. B. Let the cement thoroughly set and with corundum stone grind the band even with the trimmed face of the root.

The next step in setting, so as to attain enduring success, is of great importance and must be carefully executed. Place a small

amount of oxyphosphate on the post, and paint the joint end of the porcelain with a film of chloro-rubber, the latter being produced by adding chloroform to red vulcanite in a sufficient quantity to make a thick paint. Having thus prepared the crown, and having protected the root from moisture, insert the post and gradually bring the crown into the desired position. Instead of the chloro-vulcanite I frequently employ a disk of gutta-percha, heating the crown with the latter and then applying the requisite cement. This method has been advocated by many operators. I have found that chloro-rubber is fully as good and possibly better for this particular service in that it can be handled with greater ease and does not become aged so soon. By setting the crown in this manner permanent operation is accomplished. The cement acts primarily as an anchor for the crown, while the chloro-vulcanite serves to make an absolute joint and protects the cement from the ravaging influences of the acids of the mouth.

When I attach an individual Richmond, I anchor it on an intradental band, Figs. D and E. The method of construction is simple and free from the technicalities accompanying the old method. When constructed with an intradental band, the latter and its cope may be made of platinum, since this metal admits of being closely fashioned to the root and makes a perfect joint. The crown is then made as usual and is set by the method before described.

The Richmond may be made with the intradental band acting as a hollow post, Fig. C, and this method has some few advantages, namely, the circumferences afford extensive surfaces for cement attachment, the latter clinging to the external and internal surfaces of the band; and should there arise any apical difficulties the case can be treated interdentally, since access to the pulp-chamber can be readily had, there being no obstruction in the form of a post.

The use of the intradental band is not limited by the several operations which I have detailed; it may be employed in many cases and with considerable satisfaction in crowning a root which has been fractured, Figs. F and G. The following description from an article by Dr. H. J. Goslee is valuable, coming from one who has had an extensive experience with crownwork: "While the intradental band as used and advocated by Dr. Cigrand may no doubt have a place of usefulness and possess many virtues, its successful application in a particular instance has enabled me to obtain a

result which should no doubt mark it as almost invaluable in similar conditions.

"The case was that of the root of an upper left central incisor, which had carried a crown and the adjacent lateral for some time, but which from strain and poor protection of the circumdental band had become badly fractured, divided or split longitudinally into two parts. The labial fragment extended from the face of the root to about the apical third and was perfectly loose, being retained only by membraneous attachment. It was very desirable to retain this portion, as its loss would virtually destroy the usefulness of the root, necessitate the extraction of the same, and indicate using the approximal sound teeth for the purpose of bridging; hence was suggested to my mind the use of Dr. Cigrand's system of the intradental band.

"I first retained the loose fragments in position, tightly twisting silver suture wire around the neck of the root, high under the gums. This held the parts firmly in apposition, after which I proceeded to trephine the intradental groove into the densest portion of the root; then the band was carefully fitted into the groove and ground down smooth with the surface of the root. The wire was then removed and the parts were found to be held very rigidly together. The root was then crowned with a peripheral band and is now carrying the bridge so very successfully that I am gratified in attesting to the usefulness of the intradental band in at least this particular."

When the root, be it any of the anterior six teeth, presents conditions as outlined in Fig. H., a circumdental band is contraindicated, since the root is decayed down to and even below the alveolar process, and in consequence the circumdental band cannot be fastened to the outer circumferences of the root. In such a case the intradental band will most excellently fill the want, as it can be used both as a band to strengthen the root, and also to serve as a skeleton around which to build the material with which to restore the general contour of the root.

If the root is one of the anterior teeth and it is desired to attach a Logan, a trephine of the size indicated is selected and the groove cut into the root; then the band is made to fit the groove and the band is of sufficient width to allow it to reach the top of the intended metal contour. Before cementing it into position cut into the free end of the band several incisions thus making fimbriations on the

metal. Now by means of cement anchor the band into the groove with the fimbriated end extending, and subsequent to the setting of the cement. Build up with amalgam to required outline, bending the fimbriations in such a manner as to clinch the amalgam as you add it to the mass, tipping one metal point toward and the other from the center of the root. The patient may now be dismissed to call again in a day or two, when with drills and burs an opening is effected into the amalgam to correspond to the position the post will occupy when the crown is permanently set. If it be desired to build up a badly decayed bicuspid root, and it is intended to carry a gold telescope crown, the method of procedure is similar to the one just described, differing only in that the intradental band is much wider and some few holes are punched or drilled through its surfaces to afford further anchorage for the amalgam.

It has been my pleasure to have employed this system in various ways during the past few years, and many operators in neighboring states have adopted it as productive of excellent results, and I earnestly hope that methods which are intended to save and restore badly decayed roots may receive your consideration. If I have awakened in your minds the responsibility of retaining and preserving these factors of natural dentures, and encouraged a single member present to apply this or any other efficient method for accomplishing the result, I shall feel thoroughly satisfied that my paper has fulfilled its humble mission.

MEETING OF AMERICAN MEDICAL ASSOCIATION.

REPORTED BY GEO. V. I. BROWN, D.D S., MILWAUKEE, WIS.

The fifty-first annual meeting of the American Medical Association convened in Denver, June 7–10, 1898, and was as usual attended by a large representation, embracing nearly every state in the Union. In point of scientific interest it is believed to have been fully equal to others in the long line of meetings, while the hospitality of its citizen hosts, facilitated by the points of interest in the neighborhood, made pleasure an easy and natural accompaniment to scientific pursuit.

As regards the section in which centers our especial interest, that of Stomatology, the record of its proceedings may be outlined as follows: The plan of a joint session with the Colorado State Dental Society proved to be one of mutual pleasure and profit, the chair-

man of the section, Dr. Geo. V. I. Brown, alternating in occupancy of the chair with Dr. W. K. Sinton of Colorado Springs, president, and Dr. E. B. Warner of Denver, vice-president of the society, and the program was so arranged that it included members from each organization.

The first upon the list was the chairman's address by Dr. Brown, in which reference was made to the fact that "Stomatology," the new title of the section, had been properly earned by the scientific character of papers read in other years, as recognized by the members of the section in the association, and was a matter of general pride. The recommendation of Dr. Andrews, chairman of the last meeting, as to the examination of the mouths of public-school children by competent dentists, and instruction given concerning the care of the teeth, was reiterated as of important consideration.

Attention was called to the fact that the interests of the section, and also of higher dental education, demanded that an effort be made to urge upon the National Association of Medical Faculties, as well as the corresponding Association of Dental Faculties, to adjust the requirements so that students of more than ordinary ability and ambition may be able to take both the degree of D.D.S. and M.D., and without unnecessary sacrifice of time. It was urged that in medical colleges having a dental department, the dental students taking the same lectures in the fundamental branches as the medical students, and passing examinations with an equally high average, should be allowed full credit for these upon the medical course and ought to be given some distinguishing degree, such as "*cum laude*," which would enable them to graduate in medicine with a shorter period of additional study than would be necessary for students taking the regular course in dentistry alone.

In point of scientific interest note was made of the value from a clinical standpoint of the photo-micrographs of Dr. J. Leon Williams recently published, showing the nerve supplies of the peridental membrane in their possible bearing upon nervous diseases, and the term "Jaw-strain" was introduced in the same relation as "Eye-strain," a more commonly recognized but perhaps less frequent etiological factor in these affections.

The discussion was freely taken up by members of the section and society, and turned chiefly upon the educational suggestions. All were unanimous in expressing the conviction that great advantage

accrued not only to the individual but to the profession as well, through the practitioner of dentistry being equipped with both degrees, by reason of the broader education necessarily thus acquired.

The paper of Dr. G. T. Carpenter, of Chicago, entitled "A Method of Handling Alveolar Pyorrhea," was of particular interest in its practical development of methods of treatment. It was illustrated by a most ingenious adjustment of teeth with the roots surrounded by rubber, in imitation of gum tissue, and encased in plaster, with pockets as in pyorrhea cases, after the Brown method, set up in the jaws of a Bonwill articulator, with a broad rubber-band fashioned to represent the orbicularis oris muscle, the whole designed to test the practical utility of various instruments used in removing serumal deposits in the mouth. The paper was eagerly discussed, showing not only interest in the methods of the essayist, but also that his topic was very much alive in the minds of his audience.

Dr. Eugene S. Talbot of Chicago gave a lecture upon the "Stigmata of Degeneracy," illustrated with the stereopticon, before the Colorado Society, and one upon "Irregularities of the Dental Arch" at the joint session. All who were present felt convinced of the vast amount of scientific research necessary to the collection of such a mass of evidence in support of the theories advanced, and although some of the expressions heard in the general consideration of these subjects were not entirely in accord with the deductions advanced, all were unanimous in recognizing the possible future value to science, and particularly its import applied in the treatment of pathologic conditions, altering, as a thorough understanding undoubtedly will, many of the present therapeutic standards. According to the statements of the lecturer, extreme variations of form, noticeable particularly in the outline of the face and head and irregularities of the jaws, often in the extremities also, were indications of an arrest of development, or an excessive or disproportionate growth in certain parts. These variations were known as atavistic—having a tendency to return to some earlier type of less perfectly developed man; or degenerate and representing a reverse type. In either case the conditions were due to unequal distribution of the brain cells, and were therefore the outward signs of a more or less irregular brain conformation, which might be evident in the individual by predomination of some one or more of the intellectual

faculties, producing a genius; or of the animal tendencies, making him brutal or criminal. Want of normal stability, inebriety, cocain and morphin habits were all expressions of degeneracy, and patients thus afflicted, in common with many inmates of penitentiaries and houses of correction, ought to be treated as sick people by a physician, rather than by minions of the law.

"Sencoplakia" was the subject of a paper by Dr. John S. Marshall of Chicago. It was descriptive of a diseased condition of the mucous membrane of the mouth, the diagnostic signs of which were distinguished by white patches which had a tendency to form ulcerations upon the surface somewhat similar to syphilitic patches, though differing in appearance in not having the characteristic border. It was shown that these ulcerations were prone to degenerate and become malignant, and if neglected might often become sarcomatous. The etiological factor was some form of irritation, doubtless favored by certain conditions of the blood, rarely ever noticed in women, most frequently among men excessively addicted to the use of tobacco. The treatment was to remove the source of irritation and treat locally with antiseptic remedies, but avoid escharotics, which tend to a still further loss of tissue. The pathology of the disease was treated in a most scientific manner and full quotations showed extremely careful research by the author in preparation. A summary of the discussion would be simply a very general sense of obligation upon the part of all interested in treatment of the oral cavity toward anyone who might elucidate one of the little understood pathologic conditions, and particularly one of those which, while probably of much more frequent occurrence than is commonly recognized, because of unfamiliarity with its symptoms, is yet a source of danger in predisposing to cancerous affections.

Dr. W. B. Hill, Professor of Materia Medica in Milwaukee Medical College, read a paper upon "Methods of Teaching Materia Medica to Dental Students." He called attention to the ideal from the instructive standpoint and the real or practical in dealing with present necessities. The former meant a perfection possible only through taking the entire regular medical course upon the subject, the latter showed the practical disadvantages of requiring the average student of dentistry to devote too much time to one branch, and thus perhaps cause him to neglect important matters of technical instruction. As between the two extremes he urged that more

thorough instruction be given the dental student in those particular drugs with which he was most concerned in the practice of his special branch than was necessary to the general practitioner of medicine, and less time be expended upon those he would seldom be called upon to use; although for the student who could be induced to do so, and whose ability was equal to the task of taking the entire medical course, such an additional education was of inestimable advantage in his later practice, because it was a recognized fact upon the part of physicians that dentistry was a rapidly growing specialty of medicine, an understanding of which was important to the practitioner in much the same way as a medical education was advantageous to the dentist. He warned, however, against the narrowness which is likely to be the accompaniment of too great a specialization and urged as broad an education in every way as possible. Proof sheets were distributed showing the plan of instruction which he had adopted, upon which were printed those portions of the subject which it was deemed best that the student should study beforehand, and these being given to the class in advance, only recitations were necessary upon these portions of the subject. The rest he thought could better be given by lecture, particularly the therapeutic application of the remedies, into which could be infused not only the individual ideas of the lecturer but much of his personality as well. The subject was discussed by the deans and teachers of a number of dental schools who were present, and all unanimously agreed with the author.

"Only a Baby Tooth" was the subject of an essay by Dr. W. H. Hall of Denver. This was an appeal for the preservation, and for a more careful study of the necessity of a method to retain the deciduous teeth, forbidding their extraction on the ground that malformation of the jaws was likely to result from their too early extraction. The ideas advanced as to methods of treatment of those teeth and the manner of educating patients to a realization of the importance of the subject was very carefully elaborated. The subject being in line with the paper to be read by Dr. Baldwin, discussion was postponed in order that they might be considered together.

Dr. A. E. Baldwin of Chicago then read a paper entitled "Some Facial Deformities and Their Prevention." In a very forcible and effective manner attention was called to many errors on the part of the laity and also, unfortunately, by practitioners of dentistry, the

effect of which was to produce in the natural course of development of the child more or less alteration of the form of the development of the jaws, and indirectly the contour of the lines of the face. These two papers were discussed together and the statements of the authors upheld in every particular.

Dr. J. Taft of Cincinnati read a paper entitled "The Management of Pulpless Teeth," and handled the subject in a very scientific manner. The use of cocain in the extraction of pulps, instead of devitalizing with arsenic, was advocated, as was also the immediate filling of the roots of such teeth, the essayist expressing the belief that the use of arsenical poison as a destructive agent was frequently a source of serious trouble, whereas the use of cocain in the manner described was quite harmless; and the roots of teeth, proper precautions having been taken, were never in a better condition for filling than immediately after the hemorrhage incident to extraction had subsided. Other phases of the subject were fully treated, thus covering the entire subject in a most comprehensive manner. A variety of expressions was elucidated in general consideration of the essay, for perhaps in no other one branch of the dental profession is there such a diversity of views as in this one, but the keen interest that the paper excited was extremely satisfactory and beneficial.

Dr. A. H. Peck of Chicago read a paper entitled "The Essential Oils, Their Relative Value as Antiseptics, and Irritating and Non-Irritating Properties." This was perhaps one of the most valuable additions to the literature of the subject that has been or will be added for some time, and is quite beyond the ability of even attempted description. It is sufficient to say, however, that those present fully appreciated its value and the extreme self-sacrifice the author had undergone in experimenting upon himself with various drugs in the interest of science.

Dr. W. G. A. Bonwill of Philadelphia gave clinics galore before the Colorado dentists and read a valuable paper as well, all of which caused a lively interest, and was a general distribution of valuable information to all who were so fortunate as to be present.

Dr. Vida A. Latham of Chicago gave, as has been her custom in years past, a valuable addition to the program, entitled "Dental Septicemia in the Antrum," which was treated, as might be expected, in a most scientific manner.

A most enjoyable feature of the meeting and association with the

Colorado dentists was a banquet given members of the Stomatological section of the State Dental Association of Colorado at the St. James Hotel. Something over a hundred were present, and if the hosts enjoyed themselves as much as the visitors did, they must indeed have been amply repaid for the care, pains and elaborate preparation made for the entertainment of their guests. Dr. E. R. Warner of Denver was toastmaster, and a stringed orchestra, delicious menu and rousing good toasts completed a most enjoyable and profitable program throughout.

METHOD OF BACKING TEETH.

By F. M. Poulson, D.D.S., Lansingburg, N. Y.

In the February, 1898, issue of the Digest is an article by Dr. W. A. Siddall, of Cleveland, on backing teeth. I wish to emphasize the importance of his method, for I have been working along the same line for several years, but unlike him I did not have the public spirit which prompted him to give it to his brother practitioners. It is one of the many little tricks which lighten our work and enable us to obtain better results, and in this case it very nearly approaches perfection.

My first attempt was also with the mallet to effect the compression necessary to force the backing down to the irregular contour of the tooth, but later I substituted the more gradual pressure of the ordinary bench-vise, being careful not to exert a force which would render liable the breaking of the tooth.

My present method of procedure is as follows: First fit the tooth to the plate or in place for the crown, allowing always for the thickness of the backing, and giving a slight bevel to the edges of the tooth. Then fit backing in the usual way, using 24 k. 34 gauge gold plate, cutting to cover as much of the tooth as is desired, and bend down or cut away the pins as is necessary. Now lay the tooth with the backing on a piece of car-spring rubber, ½-inch thick, place a slab of lead over the tooth, hold the whole in position, place in a vise and exert gentle pressure. On removal we find a perfect adaptation. The projecting or overlapping edges of backing may now be trimmed flush with the sides of the tooth. If not perfectly adapted, or if disarranged in trimming, it may again be submitted to pressure in the vice.

An ordinary rubber tooth may be used with as good results as a

Digests.

VALUE OF THE SALIVA IN DIGESTING FOOD. Even the merest tyro in physiology is familiar with the fact that saliva not only prepares the food so that it can be readily swallowed and acted upon by the gastric and intestinal juices, but that it contains a ferment which possesses to a high degree the ability of commencing and even carrying to completion the transformation of starch into sugar, or in other words, the preparation of carbohydrate materials so that they can be readily absorbed and appropriated to the various uses of the economy. For many years when patients came to a physician complaining of symptoms of indigestion it was the custom to administer pepsin and hydrochloric acid, under the erroneous idea that it was the proteids in the food which were not properly treated by the digestive juices and that relief could be obtained by aiding the stomach in the manner indicated. Only comparatively recently has the importance of pancreatin digestion been recognized as surpassing that carried out by the gastric juice, and still more recently has the profession come to realize the fact that in many cases the predigestion of starchy foods or the administration of diastatic ferments capable of aiding in their digestion is in a certain proportion of cases far more important than the administration of pepsin or pancreatin for their proteolytic action. Recent studies which have been made in the laboratories of Yale University emphasize the value of the saliva as a digestive juice. They were carried out by Professor Chittenden, who reported his results at the last meeting of the American Physiological Society in Ithaca. This investigator showed that great variations in the amyolytic power of the human saliva take place. Thus he found that saliva collected before breakfast is stronger in amyolytic power than that secreted after breakfast. He also found that this greater power before a meal is not due to any increase in alkalinity, but to the greater concentration of secretion coming from glands that have been resting. He also discovered that stimulation of the mucous membrane of the mouth by the vapor of ether or chloroform, or by any other substance which irritates that mucous membrane, causes a secretion richer in digestive powers and solid matters than that caused by mere mechanical stimulation. These

plate tooth by simply cutting off the heads of the pins, for a peculiar feature of this method is that the more unevenness of surface exists the better will be the results obtained.

I recommend pure gold for this work because of its pliability and higher melting point than any of its alloys. Platinum can be used with equally good results as regards adaptation, but it will contract under heat, and in time a discoloration will be very noticeable wherever the edges of plate are exposed.

THE NON-GRADUATE PRACTITIONER.

By Dr. Geo. E. Greene, South Gardner, Mass.

Is it not true that there are many good and successful dentists throughout the country who never saw the inside of the dental college? Men who have worked hard and studied hard, and as nearly as is possible satisfy the requirements in the communities where they live. Many of them were in practice before some of the recent graduates were born. If they would like a degree, is it justice, when their practical knowledge and skill are considered, to require them to leave their practices and devote the better part of three years to college work?

Would it lower our standing as a profession if some reputable college should afford an opportunity to acquire a degree in the following manner: Each applicant must be a dentist of not less than fifteen years practice, and a member of some reputable dental society. He should matriculate and the college could then outline a course of home study for him to pursue. At a suitable time thereafter he should take a short course of lectures at the college in the studies outlined, and then be examined in the same. If the result showed that he was qualified, let him be granted a degree of D.D.S.

I think an act of this kind would encourage many, whom we are pleased at times to look down upon and call ignoble names, to make an effort in the right direction, and would add dignity to the profession of dentistry.

A Blow at "Face Specialists."—A bill has been introduced in the New York assembly to put a stop to unprincipled persons who make a business of removing facial blemishes and making dimples. The bill provides that such work may not be done by any but practicing physicians. A fine of $250 and imprisonment for six months will be the penalty for the first offense, a fine of $500 and a year's imprisonment for a subsequent conviction.—*Medical News*, April 2.

welded perfectly (illustrating). Now I will tie a thread about these and drop them into a bottle of ammonia, not in the liquid but simply in the dry gas above the liquid. This bottle contains ordinary ammonia water. I will stick this bit of red wax on the thread so that we will not mistake it. I have in this other bottle a solution of chlorin, and above the liquid the bottle is filled with chlorin gas. In this I have suspended several ropes of gold so that they do not touch the liquid. I will remove them now to the ammonia and will explain later. They have been in the chlorin gas for about half an hour, may be a little longer. I stick these threads to the glass with wax so that they will not fall into the liquid when I remove the cork.

When the welding property of gold was first discovered it was thought by most dentists to be some special preparation of gold. The facts were these: Dentists had been urging upon manufacturers of gold foil the importance of the gold being pure, and that the surface of the foil should be clean. This was urged from year to year increasingly, and it so happened that in the effort to get the gold pure and the foil clean the manufacturers found the gold foil became sticky, and they were in considerable trouble because the sheets of gold stuck together in such a way that they could not be unfolded without tearing the sheet. This was regarded as objectionable and they contrived various means for overcoming this stickiness before the gold was put upon the market. But it so happened that some books of gold went out that were still sticky, and Dr. Arthur, discovering this, thought it was a curious thing. He tried the gold in filling teeth and thought this adhesive property of the gold was a great advantage. He therefore wrote to the manufacturers, asking if he could have more of the sticky gold, and he was informed that he could have all he wished, and that if the gold was freshly annealed before using it would be more sticky. After careful experiment he announced that gold would weld cold; that there was an actual welding of the gold, not simply an adhesion, but absolute cohesion. Then came the discussion of this cohesive property, why it was developed and why it was lost, and we had quite a number of papers, some very learned, dealing with this subject theoretically. It so happened that I was somewhat engaged in the study of this subject myself, and for other reasons entirely I had set up a chemical laboratory in a room connected with my office, and was doing a

observations are of interest not only because the importance of amyolytic ferments, both real and artificial, is attracting more and more attention from the profession, but also because two habits, supposed to be particularly prevalent among Americans, seriously influence the secretion of saliva, namely, the chewing of tobacco and the use of chewing-gum, the latter having become particularly common since the introduction of the bicycle. Professor Chittenden's experiments indicate the fact that those persons with deficient digestion of the starchy articles of food should avoid chewing any such substances for a considerable period of time prior to a meal, as by this means the salivary glands will have an opportunity to rest and the liquid which they pour out when starch is taken will then be competent to digest its share of the meal. Where tobacco and chewing-gum are kept in mouth until time of meal the salivary glands are not only unable to secrete enough amyolytic ferment to aid in the digestion of the starch, but are also unable to secrete enough fluid to thoroughly soften and disintegrate the food, and as a result the indigestion of all articles of food ensues, since the pabulum when swallowed is not in a fit condition for gastric or duodenal digestion.—*Jour. Am. Med. Assn., April, 1898.*

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WELDING PROPERTY OF GOLD, WITH DEMONSTRATIONS. By G. V. Black, M.D., D.D.S., Chicago. Read before Chicago Odontographic Society. This subject has not been closely studied or followed within the last fifteen or twenty years, so that those who have come into the profession within that time have had little opportunity for the study of the subject. Some of the older members of this society may remember that during the sixties and the early part of the seventies there was much discussion relative to the welding property of gold—why it was that gold welded? why it was that it failed to weld? This is what I wish to illustrate to you to-day, for after observing dentists using gold and watching their results, I see plainly that not many are getting the full benefit of the welding property of their gold. Now in order to get my experiments along I will prepare a few ropes of gold and then give you something of the history of this subject. This is a sheet of No. 3 gold rolled into a rope, which I will pass in the annealing lamp and anneal, and another one I will prepare similarly. You see they stick together and when I press them strongly they will be

great deal of chemical experimental work, having class recitations evenings. Now it was common in those days for dentists to have more or less gold lose its welding property in such a way that it could not be restored by annealing. While I was carrying on the chemical experiments I discovered that I was having more trouble than usual with the welding property of my gold, giving me the idea that the gases escaping in these chemical experiments had something to do with it. I therefore instituted a search, exposing gold to this gas and that, and I discovered that each of a very considerable number of gases would destroy the welding property of gold promptly. How did it destroy it, was the next question. Why was it destroyed in this way? I found that my reasoning upon it would not answer the question. I therefore had to demonstrate it experimentally. The results I can give you somewhat briefly. I found only a fact that we had not known before. It was well known at that time that charcoal, somewhat fresh from the furnace, if exposed to carbonic acid gas would condense within its pores many times its own volume of the gas, not simply filling the pores with gas in its ordinary rarefied state, but an actual condensation of the gas occurred until it became in a degree a solid; otherwise it could not condense many times its own volume of gas. This is one instance.

Another is this: We take a glass rod and dip it in a bottle of water; it comes out wet. The molecules of water have a stronger attraction for the glass than they have for each other, and a portion of the water adheres to the glass rod. Again, if we take the same glass rod wet with water and dip it into a bottle of oil, we will find that the water has been removed and the oil adheres to the surface. Here we have the fact that the oil has a stronger affinity or a stronger attraction for the glass than has the water. It develops the fact that each of these substances has an attraction to the glass, the one having a stronger attraction to the glass than the other. The principle with regard to gold is precisely the same. If we place gold in the atmosphere of ammonia the ammonia is condensed upon the surface of the gold; there is not merely an adhesion to the gold, but an actual condensation of the gas upon the gold, forming a thin film of a solid. If we dip it in chlorin gas that is dry we have the same kind of condensation but in greater amount. If it is damp the chlorin gas will actually attack the gold, forming a chemical combination. But these others are not chemical combinations, they stop short of

chemical combination. Platinum is found to attract oxygen strongly, so that oxygen is condensed upon it in considerable amount. Indeed, if we take spongy platinum, and after annealing it expose it for a moment to oxygen gas, or simply let it cool in the ordinary atmosphere and then turn on it a stream of hydrogen, the platinum attracting the hydrogen as well as the oxygen, these two gases will be condensed in the pores of the spongy platinum so quickly that the latent heat of the gases is liberated so rapidly as to heat the platinum to redness and set the hydrogen on fire. If we can free the platinum from this condensation upon its surface it will weld. So it is with all metals. When you bring two metals in contact with each other they weld. If we take a piece of lead and cut it through and put it together again quickly, we may weld the two pieces together. If we notice the two cut surfaces we will find that a film spreads over them, and after this film spreads over them pressure will not cause them to cohere, because there is something interposed between them and they no longer weld. When we come to examine the whole list of metals we find a similar thing occurs, but the majority of metals attract oxygen strongly, and therefore welding is prevented.

I have dropped a rope of gold freshly annealed into the bottle of ammonia, suspending it above the liquid. You saw it weld readily at the time it was put in. It has only been a few moments. It requires some time for this to act. I take it out now and try to weld it (demonstrating), and you see the result. It does not weld; the welding property has been destroyed during these few moments by ammonia gas. If I anneal it, it welds. This is an experiment any of you can try at your leisure in your office. The loss of the welding property of the gold is not from any change in the gold; there is nothing on the gold that you can see by ordinary vision. There is no change in the appearance of the gold; it seems as though nothing had happened to it. There is no chemical effect; but there is a film of gas condensed upon the gold that prevents the surfaces from coming in contact, therefore the failure to weld. This film is driven off by heat in annealing and it will weld again.

I will now remove one of the rolls that has been subjected to the chlorin gas and then to the ammonia. I will cut it into pieces and anneal it a little bit differently. My object now is to show you that something has been condensed upon the gold. The gold looks

as it did before; we see no change in it; the appearance is the same. The gold will not weld. We may put these pieces together, compress them up together; they will not weld (demonstrating) Now I will select a tube. One will do as well as the other. I will drop those in the tube and the thought is this: If the gases have been condensed upon the surface of this gold we may form a salt on the surface by introducing another gas, introducing two gases which, when coming together, will form a salt. If we can distill away the salt that is evaporable by heat, possibly we may crystallize it and get sight of it or even analyze it afterward and see what it is that has been formed on the gold, as some of my students have done this winter. Then by subjecting it to ammonia and then to chlorin we would get ammonium chlorid, or if we subject it to chlorid and then to ammonia we would get ammonium chlorid formed. I will now anneal it. Watch it as closely as you can (demonstrating). You see a ring of ammonium chlorid forming on the glass where it is cooler (a white ring of ammonium chlorid forms in the tube). You can perhaps see it from all over the room. The condensed ammonium chlorid not attached to the tube you will see moving back and forth in the tube. This amount of ammonium chlorid now seen in the form of crystals was formed upon this one sheet of gold, a thing that we could not see upon the gold at all, but a thing that becomes very apparent to us when we have annealed the gold in the tube in this way so as to show the crystals of the ammonium chlorid that have been formed upon the gold. Here is another (repeating the experiment). I will say, gentlemen, as I go on, that this experiment may be performed in many ways in order to show this condensation of gases upon gold, and we may use various gases. It is not necessary that we use ammonia and chlorid always; we may use sulfureted hydrogen and ammonia; we may use various other gases, anything that will form an evaporable salt, and illustrate this experiment in a great number of ways. We are not confined to any one plan or any one set of gases for this purpose.

The gold used in this experiment, after it has been annealed, is just as good as it was before; it will weld just as perfectly. We take these pieces, stick them together (demonstrating) and weld them just as if they had not been subjected to these gases. The principle is this: If the gases uniting upon the surface of our gold are such as will form a volatile salt the welding property is lost. We

may remove the salt by annealing and restore the welding property. If the gases that unite upon the gold are such as will form a fixed salt we will not be able to restore the welding property of the gold by annealing. The salts formed by ammonia are generally volatile. Then if we keep gold in an atmosphere of ammonia so that the salts formed upon the surface of the gold will be ammonium salts, we may evaporate them from the gold by annealing and restore the welding property; therefore we are able to keep gold in perfect working order simply by keeping it in an atmosphere that has a proportion of ammonia in it, so that this gas will have possession of the surface of the gold. Then any other gas that is condensed upon the surface will be condensed in the form of an ammonium salt. The gases that destroy permanently the welding property of gold are carbonic acid, the sulfur gases and the phosphorus gases. Just what is formed upon the surface in these cases it is difficult to tell. We do not know all of that. We know only that gold subjected for a considerable time to these gases does lose its welding property permanently. There are probably some compounds of the carbon group formed that are stable and remain permanently upon the gold. Some of the sulfur compounds are formed that are stable and remain permanently upon the gold, and also others, and what others we do not know. But this experiment will show you how easy it is simply to have a bottle with a little ammonia in your gold drawer, renewed from time to time (just so as to get a scent of ammonia when you open the drawer is sufficient), and you will find the gold is working perfectly from day to day, month to month, and from year to year, it makes no difference how long.

The destruction of the welding properties of gold is not immediately complete in any of these cases. It occurs little by little, and by observing the action of some gases, particularly illuminating gas, we may discover how it spreads over the gold. In this case there is a peculiar discoloration of the surface of the gold and we find it begins in spots and radiates from those spots, so that it is flecked over, but the main surface will be clean. We often see our steel instruments rust, beginning in spots here and there, which gradually spread until finally the whole surface is slowly covered. Now illuminating gas will fleck over the surface of a sheet of gold in a similar manner. So will various other gases fleck over a sur-

face of gold, so that the welding property is not lost upon the whole surface at one time. In the exposure of gold in the ordinary keeping of it, we have the welding property of the gold destroyed here and there over the surface of the sheet. The result is that while the gold appears to work fairly well, it does not work perfectly, and you are liable to have spots of nonwelding gold come in such a position upon your filling that a corner will break off, or the welding will not be perfect throughout the filling. There will be little spots of failure here and there. The filling will lack strength. There will be these little spots all through the filling, and if we put pressure on the filling it breaks away or goes down. It is imperfect. While the gold may appear to weld the filling will be flecked over its surface. It may even be so bad that it will pit and gradually crumble away. So much of the surface of the gold is injured that its welding property is really very imperfect. Now it is this imperfect welding of gold that is injuring so many gold fillings. Dentists do not get the full result of the welding property of their gold. Therefore I would urge greater care in the annealing and keeping of gold than has been exercised heretofore. We should endeavor to keep its surface in such a condition that every particle of the surface will weld. Time is an item in annealing gold. We can anneal it at a lower temperature than a red heat if we give it more time.

Dr. Morey—How about the gas flame? Dr. Black—A pure Bunsen burner gas flame is all right. It is as good as the alcohol flame. A Member—What about wood alcohol? Does it not answer the purpose? Dr. Black—I have not tried it. Dr. Taylor—It does not make as good a blaze.—*Dental Review, April, 1898.*

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PROSTHETIC DENTISTRY. By Dr. H. A. Smith, Cincinnati. Read before Isaac Knapp Dental Coterie, Fort Wayne. This subject suggests the oft-repeated remark by dentists, "There is nothing in the practice of prosthetic dentistry." Unfortunately it is true that the dentist does not as a rule receive just compensation for his efforts in this department of practice.

Inquiry as to the cause of this condition of things suggests, first that a uniform fee for "sets of teeth" of the same kind, as is the practice of many dentists, is unreasonable, not businesslike and a positive injury, not only to the individual practitioner but to the profession generally. A fixed fee for this service implies that a set

of artificial teeth is a product that can be turned out in a given time and at a uniform cost. The truth is, however, that every set of teeth, especially a full denture, is more or less an experiment. There is, in the first place, the element of uncertainty as to adaptation. Next the idiosyncrasy of the patient must be taken into account, and then the sisters and the cousins and the aunts frequently have to be considered. Every experienced dentist knows that it is often worth two or three times as much in money to make similar dentures for two different patients. Time and skill are the elements that enter into the value of productions of this character, and they should be paid for in proportion to their expenditure.

Second, Is it in accordance with correct business methods to always charge the rich and poor alike? The inability of a class to pay for our services may be in a measure compensated for by asking an increased fee from the well-to-do class. This is the custom usually followed in medicine and surgery and in the law. Even the minister expects a larger contribution from the rich member of his church than from the poor members, although the spiritual welfare of the rich and poor are of equal importance.

The immediate effect of the adoption of a gradation in fees in prosthetic work would be to bring up the quality of these operations. Opulent patients would receive our best efforts—that is, good working dentures in combination with the essential artistic features: while those less favored with worldly goods would get from our hands good, practical work, with the artistic element not wholly left out, as now frequently is the case.

In order that the practice of prosthetic dentistry may be made compensating, both the dentist and his patient should be brought to realize fully the old familiar truth, "The laborer is worthy of his hire."—*Indiana Dental Journal, April, 1898.*

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CLINIC ON A FUSIBLE ALLOY. By Grant Molyneaux, D.D.S. Made at Ohio State Society, Dec., 1897. The increased number and large variety of operations performed in the modern dental office, entailing as they do a considerable amount of mechanism, compel the busy practitioner to seek the most rapid method for the execution of his work. The construction of splints, supports for loose teeth under treatment, regulating and retaining appliances, bridges, crowns, etc., can be properly executed only under the direct

supervision of the attending dentist. If he be a busy man, both time and patience are taxed to the utmost by the cumbersome and lengthy methods generally employed in the execution of the purely mechanical details.

The methods generally employed are to procure an impression either in modeling compound or plaster of paris, followed by the mixing and pouring of a plaster model, varnishing, waxing, sand molding for die, counter-die and swaging. This requires two or more visits of the patient, when one visit should suffice.

Rapidity in dental operations is always sought, but any new method claiming such virtues is generally approached with fear and trembling, especially by our older brothers. To allay that fear, I will state that the subject of this clinic has been known to the dental profession for a quarter of a century, and as possessing many virtues, the greatest of which has been overlooked. In advocating this new (?) rapid method we fully appreciate that old adage "make haste slowly," for rapid methods are valuable only when they are *accurate and perfectly understood* by the operator. Woods' metal has been used in dentistry for many years and is known to contain bismuth, cadmium, tin and lead. The alloy before you contains the same ingredients as Woods' metal, the proportions being changed so as to produce an alloy that may be cast into a *modeling compound* or wet plaster of paris impression and give a *smooth, accurate* model or die in metal.

The advantage of being able to cast metal directly with wet plaster or modeling compound can be appreciated by all practitioners of experience, if the model or die be accurate. We feel safe in saying that an alloy composed of five parts of bismuth, three of lead, two of tin and two of cadmium, properly compounded will produce, when poured into either of the above named impression materials, a more perfect model than can be obtained by the use of plaster, but a model of this alloy cannot be used in place of plaster in all cases, as in vulcanite or celluloid work, for the fusing point of the metal is about 130° F. It is especially designed for the making of a perfect die and counter-die with the expenditure of not over five minutes' time and with the very simplest kind of apparatus. By the use of such an alloy the difficulties of sand molding are overcome and the production of a perfectly adapted plate is the result. To successfully use this or any low fusing alloy several points must be

constantly observed: (1) Castings are sharpened and nearest perfect when the alloy is poured close to the congealing point. (2) Overheating causes a loss of time and deterioration of the alloy. (3) To make a perfect and smooth casting in modeling compound the impression should be first oiled and then the alloy cast in a mush-like consistency, when it will fall in a thick soft mass into the impression, which is quickly jarred on the table, cooled in water and separated. A little practice will enable the operator to produce a perfect model in every instance. Take a plaster impression directly from the mouth, soak it thoroughly with sperm oil and pour the alloy at a little higher temperature than for modeling compound and let it stand until cold. In order to obtain a thick base for the model, take a thin copper strip (in lieu of this take a strip of heavy writing paper) about ten or twelve inches long and two inches wide, wrap around the impression and hold in place by snapping over it a small rubber band. Fill in spaces between band and impression with soft putty, which will always be ready for use by being kept under water. (A half-pound screw-top vaseline jar half filled with soft putty and covered with water will keep quite soft for years.) (6) To make counterdie, wrap the copper strip around the base of the die and fill all undercuts and unnecessary parts with the putty, paint over the surface with whiting dissolved in water or alcohol and cast the alloy as cold as possible. (7) Before remelting castings they should be cleaned of all putty and other dirt. If, however, the metal becomes contaminated it can be cleaned by heating until it becomes perfectly fluid, when the impurities can be removed with a piece of blotting paper. One illustration of the use of this alloy may be suggestive of its many valuable applications.

In adding a gold or platinum base for full dentures where the recession over the tuberosities and anterior ridge is so great as to make sand-molding without a core absolutely impossible, make the model or die of fusible alloy by casting into the impression. For such a case always use plaster, as this can be broken off in such a manner as to be restored and a second die cast. Upon this second the relief or vacuum chamber, made of block tin, can be attached with thick shellac varnish, or the relief can be first trimmed out of the impression. Use the second die for the first stamping of the plate, making the adaptation to the undercut as close as possible with riveting hammer. Try the plate in the mouth and properly

trim and wire if necessary. Replace on the used die and wrap the plate and die with one covering of cheese cloth or thin paper, place in shot-swaging device and swage.

The plate cannot now be removed from the die, but by placing the same in hot water the metal will run out of the plate, leaving it unchanged in shape. It can now be polished, and after transferring the relief from the old die to the unused one the plate is sprung onto it, and swaging with shot and melting the metal out as before will leave the plate with an adaptation that cannot be procured by any other method. In taking an impression for metal castings it should be a little thicker than usual, and any number of dies can be made from the same impression, all of which will be alike.

The compounding of this alloy requires greatest care in protecting it from action of air during first melting and in manner of adding the metals. As it never again approaches the first heat except by carelessness the metal will remain permanent in composition and working qualities indefinitely.—*Ohio Dental Journal, April, 1898.*

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VALUE OF INTERROGATION. By Frank L. Platt, D.D.S., San Francisco. Read before S. F. Dental Assn., Jan. 10, 1898. One of the leading objects of modern education should be that of teaching people to think and to think intelligently. The study of mathematics for this reason should be encouraged, and under a good instructor there is probably no other line of study which will so freely develop the reasoning power. But the ability to reason from effect to cause marks the true value of the student in any science. He who follows in the footsteps of others simply because footprints have been left in which he may place his feet, is but a servile imitator of those who have preceded him, lacking at once in certainty, originality of purpose, fertility of resource, and all the qualifications which constitute true success.

The failure of education to develop this reasoning faculty is due in the majority of cases to a lack of interrogation. The student who, when asked why he does a certain thing in a particular manner, replies, "My teacher told me to do it that way," gives an answer which should bring forth pity for the student and condemnation for his teacher. He should know the reason WHY, and *why* that is the reason—a consummation to be reached only by continued and oft-repeated interrogation.

A question in itself may be one of the simplest things imaginable, but the ultimate value of it as a producer of results may be almost incalculable. The answers to questions constitute the pith and point of all the knowledge of the world; but the questions preceded the answers, and all progress has for its initial starting point an interrogation mark. Life begins and ends just there. What is life? What comes after death?

Children know instinctively the value of interrogation, as is shown by their great ingenuity in asking questions; and it would speak volumes for our knowledge if we were able always to answer their questions cheerfully and logically; and we would be more careful of our statements if we oftener asked ourselves to what questions they might lead. The mother who told her son that God could do anything, would not have made such a statement had she foreseen that the young man would ask her, "Well, if God can do anything, could he make a three-year-old colt in fifteen minutes?"

We all possess within ourselves a fund of inquisitiveness that in most cases may well be represented by a large interrogation point; we want to know; our desire to find out something, no matter what, constitutes the long-felt want that students and teachers, workers and demonstrators are continually trying to fill.

Only the careless, the foolhardy or the reckless take a step in any direction without mentally questioning themselves in regard to its expediency. Lawyers and statesmen, philosophers and story-tellers have often made their strongest points by simply asking a question. The congressman who asked "Where are we at?" had his reputation established at once. The author of "The Lady or the Tiger?" knew full well the value of the question with which he closed that charming narrative. All the force of the story lies in its closing sentence.

You may not have stopped to think of it, but it seems to me most of the people we meet are simply animated interrogation points, not so much because of the questions they ask as of the questions they suggest to us. There is nothing in the world which does not give rise to a question; the trees and stones, the streams and passing clouds all excite curiosity and lead us to ask what they are, whence they came, why they exist, and all the splendid array of natural sciences may trace their origin to questions thus asked.

It seemed to me better not to bring dentistry into discussion this

evening, so we might have a little recreation and jolt for a few minutes out of the ordinary rut in which so many of us run, but the subject must be brought briefly home to us. Let us stop and think how many mistakes might be avoided, how much better our work might be done, how much we might teach ourselves if we only stopped at each successive step in our procedures and asked the questions "Why do I do that?" "Why do I use this?" "What will improve my present method?" It would be a new education for many of us.—*Pacific Medico-Dental Gazette, April, 1898.*

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IDIOPATHIC SALIVATION. By Walter R. Jordan, M.D., Birmingham, Eng. On Dec. 31, 1896, a boy, aged 4 years, was brought to my out-patient room by his mother, who sought advice on account of the nuisance to herself and him of the constant dribbling of saliva from his mouth. The nuisance complained of was obvious, the boy's clothes for some distance below his neck being thoroughly soaked and the statement that he wet his clothes right through in this region was confirmed by a moment's examination. The child, it was stated, had always dribbled, very much so when cutting his teeth, since which time it had never ceased. The dribbling continued at night, so that his pillow was wet, but to a less extent, and the amount of saliva that escaped varied from time to time. The boy appeared quite happy and, but for the salivation, perfectly healthy. He was said to have good health, to eat well, and to have no digestive trouble, but to be always thirsty. He had ordinary diet and was very fond of porridge. He was intelligent for his age and talked plainly. Examination displayed no latent mischief or defect general or local. The mucous membrane of his mouth was healthy; the left tonsil was perhaps slightly enlarged; and of the teeth, which were cut normally, the lower first molars were already decaying. Four other children were quite healthy and had no tendency to salivation.

Three months later another boy, aged 2½ years, was brought to me, who in appearance and the tale told of him was an exact counterpart of the former. He too had dribbled very much during dentition, a process which began when he was four months old and was completed eight months later. The dribbling never after ceased, but was not given much attention till he was 2 years old. Since then it had got worse, and it was still getting worse, though it varied in

degree. His clothes were saturated. At one time it had continued through the night, but that had ceased. His general health was said to be very good, except that when he had a cold it "flew to his tonsils," and his appetite was not very good. He too had fed much on porridge. His teeth and the mucous membrane of his mouth were in a healthy state, but his tonsils, especially the left, were much hypertrophied. No other lesion of any sort was discovered on examination. He was intelligent enough; did not yet speak plainly but was getting on.

These two boys were typical examples of a class of cases of salivation which remain after the separation of all cases due to ascertainable causes, to be grouped together as "idiopathic." This is a condition of some rarity and of such interest as attaches to an affection not dangerous, but the cause of constant discomfort to the sufferer and those about him. H. Bohn speaks of the salivation as having its orgin at the age of 3 or 4 months, with the customary salivation of dentition, and not thereafter ceasing. He refers to cases in children of 2 to 8 years old, of good physical and mental development, who had either successfully got through the ordinary complaints of childhood, or been ill seldom and never seriously. The salivation was apparent for the most part only in the erect position, and was therefore limited to the day and ceased at night; only one child dribbled in sleep as well. Emotions of the most varying kind diminished it. In one case a sort of control was established, the salivation appearing only on occasions which absorbed the entire attention. Iron was of undoubted influence on this form of salivation; but although some of the children were anemic, Bohn thinks it inadmissible to attribute to the anemia alone either the occurrence of the cases or the curative value of iron. He looks on the condition rather as having the features of a neurosis. The intermittent character of the salivation, its subordination to psychical influences, its peculiarity of either more and more abating with the progressive development of the body, or showing itself amenable to remedial drugs, point to a peculiar and isolated affection of the salivary-gland nerves in the developing organism of the child. The shortness of the period of observation did not permit of his seeing whether the salivation or the tendency to it ceased spontaneously at any particular age. It would then, he points out, run parallel to many forms of enuresis in children, in which, with complete soundness of the

rest of the body, a disturbed nervous impulse prevails; likewise in a very narrow province, which commencing puberty so often spontaneously adjusts.

In both my own cases the salivation continued during sleep; in other points, however, they correspond with those of Bohn. As regards duration, I can unfortunately add nothing to his statement. My second case, after getting over an attack of tonsilitis in April, contracted diphtheria in May and died after a few days' illness. My first case remained under observation till June 14, when he ceased to attend. Recently I found an attack of measles was the cause of his failure to come to the hospital. He had quite recovered from this and the salivation was still going on.

In this case I used belladonna persistently for five months. It relieved at first, but after a week or two the dose had to be increased, and this continued, cessation for a week or so on increased dose, with subsequent toleration and reappearance of the symptoms, till on May 26 ℿxx. of tr. bellad. were being taken three times a day and the salivation was in undisturbed progress. I then put him on iron, but the observation was shortly interrupted as above stated; and the progress of the second case, in which I also used iron, was quite too brief and complicated for any evidence of the value of the drug to be obtained from it.

An interesting point in these cases appears to be how far the salivation is actually the result of an increased flow, and how far it is due to a failure to acquire the habit of automatically swallowing the saliva. Bohn says nothing about the amount and appears to regard it as undoubtedly due to increased secretion; but the presence of hypertrophied tonsils in one case may indicate that a child who finds swallowing a more or less difficult process may simply fail to acquire the automatic swallowing habit.

The case reported by Finlayson is of a different nature, in that the salivation appeared rather suddenly at the age of 6. The child was otherwise strong and healthy, was bright and intelligent; had had at times shortly before she came under observation pains in the belly, and even occasionally slight sickness and diarrhea, ascribed to some error in diet. The discharge of saliva measured about 30 oz. in the 24 hours; but in addition to this all her clothes were found quite wet in the morning when she was dressed. She was treated with belladonna and was well in a month from the begin-

ning of the treatment, the salivation having existed a month before treatment was begun. The case resembles very closely many cases of pyrosis. There is evidence of sufficient gastric or other abdominal irritation to account for the reflex secretion of saliva, which is the essence of most if not all cases of pyrosis. Had the fluid, instead of escaping by continuous dribbling, been retained for a time and then ejected in gushes, the aspect of pyrosis would have been completely presented.—*Birmingham Medical Review.*

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MOUTH-BREATHING—CAUSE AND EFFECT. By Gustavus North, A.M., D.D.S., Springville, Iowa. Read before Northern Iowa Dental Society, Sept. 1897. The subject which I will present to you has in my opinion not received the attention that it should. Mouth-breathing is not simply a habit, but the child is forced to breathe through the mouth on account of some malformation or foreign growth. Mouth-breathing is caused by some obstruction in the nose or naso-pharynx. The obstruction in the nose may depend upon a congenital narrowing of the passage or from deformed bony walls. In some cases the septum becomes thickened or deviated, and in other cases we find only the soft parts cause the obstruction.

I will not attempt to give treatment, but simply quote what a leading specialist says of these deformities: "Is it right to let the patient go through life with loss of hearing, deformities of face and chest, and with other inconveniences, mouth-breathing, etc., when a simple operation will give entire relief—an operation devoid of danger?"

Mouth-breathing in childhood has a tendency to cause malformation of the superior maxilla, which at this period is very soft and yielding, and the pressure of the lips and cheeks upon the maxilla and teeth will soon cause malformation of the dental arch and a V-shaped form will be developed.

Necessity for Nasal Respiration.—Nature intended the nose as a preparatory compartment to respiration. Inspired air is freed from dust and germs, receives its proper amount of moisture, and is raised or lowered to the proper temperature by passing through the nose. Even if the nasal cavities are in a normal condition, nasal respiration cannot take place if the naso-pharynx is obstructed. The muscles of the growing child become distorted by constantly keeping the mouth open day and night.

The action of these distorted muscles upon the soft and yielding bones of the child's face, together with the absence of admission of air to the accessory nasal cavities—the frontal, sphenoidal, ethmoidal and maxillaries—causes a deficient development of these sinuses, giving a flat appearance to the cheek bones and producing a peculiar physiognomy, characterized by the open mouth, vacant stare and almost idiotic expression of countenance.

The hanging lower jaw and constant mouth-breathing, together with deficient development of the bones constituting the nasal septum, and the pressure of the lips and cheeks upon the teeth and maxilla, develop a high arch and a narrow lower jaw with protusion of the front teeth; this is usually associated with long continued and excessive adenoid vegetation.

In infants the first symptoms to attract attention are as a rule "hard" breathing or snoring during sleep. In older children it is the dull voice and deafness which generally attract attention.

Irregularity of the teeth is oftentimes caused by neglecting the treatment of the diseases of the throat and nose, which should come under the care of a specialist.—*Items of Interest, May, 1898.*

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PRACTICAL BRIDGE-WORK FOR DIFFICULT CASES. By Thos. P. Hinman, D.D.S. Read before Georgia State Dental Society. I shall treat of cases that are difficult on account of the weakness of the teeth to be crowned, in one instance, and the other where the teeth have to be abnormally short to secure sufficient cleansing space.

The first case we shall consider is one on the lower jaw, where the first bicuspid is in the mouth; the second bicuspid and two molars are out and the third molar remains. Of course you can see that it would be folly to make a fixed suspension bridge for this case, and I have hit upon a rather unique plan for such cases. The first thing is to crown the third molar and first bicuspid with crowns having perfectly parallel sides, but with properly articulated cusps. On these crowns bands of clasp-metal are made to fit them closely. You will notice that I say clasp-metal, for this is the only metal that is adequate for this purpose, possessing both hardness and rigidity. To make these bands fit the crowns perfectly, each crown is imbedded in moldine and then withdrawn; metal is poured into the form thus made, giving you a metal model of each. To this, you can

readily see, the clasps are fitted. The next step is to take an accurate plaster impression of the alveolar ridge between the abutments, so a metal die and counter are made, and a 20k. gold plate, 26 gauge, is swaged to fit the ridge. After this is done the crowns, holding in position the bands, are placed over the teeth in the mouth, and the gold plate, swaged to fit the ridge, is also placed in position. An impression of this is taken in plaster, the crowns being removed from the impression after it is taken from the mouth, but allowing the clasps to remain in the impression. A plaster and marble-dust model is now made of this, which shows the relations of the bands and plate. The bands are now firmly soldered to the gold plate; after this is done it is carried to the mouth, after putting the abutment crowns in position, to see if the relations are correct. A proper bite is now taken, using the gold plate as a base, and gold plate or saddle-back teeth are now soldered in position. The crowns are now set permanently in the mouth, but before the cement is thoroughly hard the bridge is slipped into position. This insures the correct relation of the abutment crowns and of the bridge. It should be allowed to remain in position for at least six hours before removing to clean off excess of cement. Your work now is completed and you can readily see that you have a practical removal bridge, which can be readily cleansed, but gets its support from the gums entirely, no unnatural strain coming upon the abutments, as would be the case in a fixed bridge. I have several such cases in the mouth which have proved themselves a great satisfaction to my patients as well as to myself.

Case No. 2. The following method is used in cases where the teeth crowned for abutments are very short, and is used exclusively on the lower jaw. After the crowns are prepared in the usual manner, the impression taken, and the plaster and marble-dust model made, holding the crowns in their relative positions, a platinum bar, about 16 gauge, is soldered on the approximal surface of one abutment, extending to the opposite. Cusps are now swaged up to fit the intermediate space, and are waxed upon the top of this platinum bar. The case being now invested and turned cusps downward, solder is flowed around the bar, and filling the cusps solidly. The case is now taken and filled from both sides, so as to leave the solder over the platinum bar the greatest thickness at that point, or in other words, the bridge is bevelled from both sides instead of only from

TO LESSEN WEIGHT IN BRIDGEWORK. By Thomas Crenshaw, D.D.S., Atlanta, Ga. In all suspended gold crowns, *after* reinforcing same, select a porcelain tooth corresponding in size to the class desired. Wrap this with thin sheet platinum, first having coated the platinum *inside* and *out* with the proper flux. Place small bits of 22k. solder in bottom of gold crown, then place the platinum-wrapped tooth in the crown with solder liberally arranged between tooth and crown. Invest and direct the flame at the *bottom* of the investment. This attracts the solder to the cutting edge or crown surface, insuring perfect contact at all points. We have had the pleasure of seeing this practically demonstrated and are impressed with its two great desideratums—economy in gold and a minimum of weight, without impairing in the least the strength of the bridge.—*J. A. C. in Am. Dent. Weekly, May, 1898.*

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SCIENCE OF SWAGING. By Ernest A. Smith, London. The swaging of a metal plate in order that it may conform to every detail of the die affords a striking illustration of the application of the property of flowing possessed by malleable metals. This property of flowing is closely allied to the flow of liquids and is of great importance in industrial art. The relation between the behavior of solid metals and fluids has long been recognized by scientists in the fact that atomic motion is common to solids and fluids.

If a viscous liquid, such as syrup or treacle, be placed in a vessel provided with a cylindrical hole in its base, on the removal of the plug which temporarily closes it, the liquid will flow out, owing to the mobility of its particles, the end of the viscous stream being rounded.

Carefully conducted experiments by M. Tresca of Paris (in 1867) have proved that metals under suitable conditions may also be made to flow from one point to another. If an iron vessel with a cylindrical hole in its base be filled with discs of metallic lead at the ordinary pressure the lead will remain there, but on the application of extra pressure the metal will flow readily through the orifice, the end of the jet being rounded, the lead thus proving by its behavior that it is really a viscous solid. The general law which Tresca deduced from this and similar experiments is that "when pressure is exerted upon the surface of any material it is

the lingual side, as is done in ordinary cases. This gives you what might be called a double cleansing space, and leaves no room for the accumulation of filth, but at the same time gives the greatest possible strength. I have a case of this description which has been worn about a year and has given great satisfaction, whereas a bridge made after the old style, of the simple lingual cleansing space, caused the gum to grow up around the bridge in such a manner as to make it unbearable in the mouth, and I devised this plan overcoming the difficulty.—*Southern Dental Journal, April, 1898.*

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INTERALVEOLAR ADMINISTRATION OF EUCAIN. By Dr. Stewart J. Spence, Harriman, Tenn. My best results in the administration of eucain have been when injection has been made into the alveolar process. By this means it appears that the solution reaches the pericemental membrane better than when injected into the gums.

As an ordinary sized hypodermic needle is too frail for this operation (its point becoming blunted and bent, even if the stem does not break), recourse is had to the larger sized needle used by veterinary surgeons, which, when cut off at say a quarter of an inch from the reinforcement portion of the needle, is strong enough to penetrate the outer wall of the alveolar process.

But as the piercing of the gum by a needle of this size is itself rather painful, the writer first injects the gums with a fine needle in the old-fashioned way, at about an eighth of an inch from the gingival margin. This preliminary injection not only prepares the way for the more severe one, but also for the lancing, which is painful when injection is made only into the alveolus. The penetration of the alveolar process is usually made at about a quarter of an inch from the gum margin, and on both sides of the tooth, the palatal side being perhaps the better. Where there is chronic abscess present the syringe point is, if possible, driven into it.

I have noticed no bad results from this practice during the three or four months of its employment. The dosage ordinarily used is about fifteen to twenty drops of a five per cent solution. This dose has never in my hands during nearly a year's use of it caused the slightest systemic effect, not even a brief giddiness; whereas ten drops of a two per cent solution of cocain frequently caused trouble in previous years.—*Items of Interest, May, 1898.*

transmitted in the interior of the mass from particle to particle, and tends to produce a flow in the direction where the resistance is least." It will thus be seen that when a malleable metallic mass is extended by compression, such as stamping, rolling, etc., a veritable flow of the particles of the mass occurs, analogous in all respects to the flow of liquids.

As previously stated, the swaging of a metal plate presents a good example of molding a plastic metal, and of the true flow of metal, under pressure, into the sunk portions of the die. The flow of metals is also well illustrated in the striking of a gold crown from one piece of metal, also in the stamping of impression trays or the striking of a coin. "The production of complicated forms, like a jelly mold, from a single sheet of copper, under the combined drawing and compressing action of the hammer, is a still more remarkable case." The softest metals, such as lead, tin, cadmium and gold, naturally flow more readily than the harder metals, and require the exertion of less pressure, and on this account lead and tin are used as suitable metals for taking "patterns" in the dental laboratory. When a metal is hammered, it becomes hard and less easy to work, owing to the strain produced by mechanical treatment, which causes the molecules of the metal to assume abnormal positions. If the hammering be continued a point is reached at which it may be impossible to still further alter the shape of the piece of metal without cracking it. The original softness of the metal may, however, generally be almost entirely restored by subjecting it to the process of *annealing*, which consists in heating the material to a temperature which must be suited to the metal under treatment, and allowing it to cool slowly, or in some cases quickly. The application of heat to a metal produces a molecular change in its structure, the nature of the change depending on that of the metal or alloy and on the treatment it has undergone.

When, therefore, the molecules of a metal have been forced into unnatural position by hammering, they are brought back to their normal condition and the strain in the metal released by annealing or softening by heat. The process of annealing is resorted to at intervals during the swaging of metal plates as soon as the material gives indications of becoming dangerously hard.

The annealing of a plate is usually affected by heating it to a uniform dull red heat, and then plunging it while still hot into a

vessel of cold water. The application of too high a temperature usually so far changes the character of the metal or alloy that it becomes weak and is said to be "burnt."—*The Dentist, May, 1898.*

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FORMALDEHYD: ITS ANTISEPTIC AND IRRITATING PROPERTIES. By A. H. Peck, M.D., D.D.S., Chicago. Read before Chicago Dental Society. In one of the pharmaceutical journals F. C. J. Bird gives a very interesting account of the history of formaldehyd. Among other things he says, in substance: The antiseptic and disinfectant properties of formaldehyd have been extensively investigated during the past two years, and the results obtained both by bacteriologists and in the practice of various industries have given it at once an important position among bactericidal agents. Formaldehyd is gaseous at ordinary temperature, but is now obtained commercially as a concentrated solution containing 40 per cent of the aldehyd. Most of the published experiments have been made with this solution, which is placed on the market under various trade names.

Hoffman discovered formaldehyd in 1867. Loew subsequently demonstrated its germicidal powers, and Berlioz and Trillat suggested its use as a powerful disinfectant free from poisonous properties. It is a powerful reducing agent and when oxidized yields formic acid. A solid polymeric variety—paraformaldehyd—is also known. There are several chemical processes by which the aldehyd may be prepared, but the most practical is that dependent upon the limited oxidation of methylic alcohol. If a current of air charged with methylic alcohol vapor be passed over a coil of glowing platinum or platinized asbestos and the escaping gases condensed in a Liebig condenser, a weak solution of formic aldehyd in methyl alcohol results. The substitution for the platinum spiral of a roll of superficially oxidized copper gauze gently heated in a glass tube through which the mixed vapors are passed, the product being led into water, greatly increases the yield, it being possible by this means to obtain a solution containing fifteen to twenty per cent of formic aldehyd. The commercial solution "formalin" is manufactured by a process similar to the foregoing.

The forty per cent solution of formaldehyd as met with in commerce is a liquid of a pale sea-green tint, specific gravity about 1.070, acid reaction, and possessing a pungent and very character-

istic odor. In more concentrated solutions the formaldehyd tends to pass into the polymeric and comparatively inactive form; this, therefore, is the strongest solution which will remain permanent. The acidity is due to formic and acetic acids, and the faint sea-green tint to a salt of copper, a distinct film of that metal being deposited on the surface of a piece of polished steel when immersed in the liquid for a short time. When exposed to the air formaldehyd vapors gradually diffuse and the solution loses strength.

With regard to the toxicity or otherwise of formaldehyd in solution, when taken internally, no record of exact experiments relating to its physiological action on the human subject appears to exist, and information such as we possess concerning salicylic acid, carbolic acid, mercuric chlorid, etc., is wanting. The solid polymer may be given in doses up to ninety grains as an intestinal antiseptic, its action depending on small quantities of formaldehyd that are continuously liberated; and that is put forward as one proof of the harmless (?) nature of the antiseptic. Dr. Tideal is said to have taken a considerable quantity of a one per cent solution without experiencing any ill effects.

Formaldehyd ranks high as a deodorant. Either as vapor or in solution it almost instantly removes the putrid odor of decomposing animal or vegetable matter, combining with sulphureted hydrogen, ammonia, and ammonia bases generally, to form inodorous compounds. Putrid meat, broth, brine, etc., are immediately deodorized when treated with a little of the forty per cent solution.

The vapors given off by the solution are extremely irritating to the eyes and to the mucous membrane of nose and throat, so that care should be taken when handling the solution not to spill any on the hands or skin, as it is found to have an effect similar to that of strong carbolic acid. No pain is felt at the moment, but afterward the skin becomes quite insensitive and very rough and white wherever the liquid has been in contact with it.

Gelatin exposed to formaldehyd vapor becomes insoluble, even in hot water, and animal tissues generally are hardened in a remarkable manner. This property is turned to account in the rapid hardening of tissues for microscopical examination and in photography. Dr. C. L. Schleich has also prepared from the formalized gelatin an antiseptic dusting powder for wounds. Dr. Schleich dissolves gelatin in water, adds twenty-five minims of "formalin" to

the pound of gelatin and dries and powders the product. This powder in contact with healthy or inflamed tissue disengages formaldehyd vapor, thus maintaining an antiseptic atmosphere around the wound. Necrotic tissue, or masses of dried secretion, may prevent contact between powder and wound, in which case recourse is had to a weak hydrochloric solution of pepsin, which liberates formaldehyd from the powder equally as well as the living tissue.

As a hardening agent in microscopy and for the preservation of vegetable structure formaldehyd solution promises to be of the greatest service. Mr. E. M. Holmes read an interesting paper on this subject some months since and his experience confirms the statements that have been made as to the advantages of formaldehyd over such solutions as chromic acid and mercuric chlorid, or even absolute alcohol. Dr. Eccles, writing to the *British Medical Journal*, has stated that while the last named reagents required a period of time ranging from four or five to fourteen days, and the tissues either became brittle and unequally hardened or the staining was interfered with, those sections treated with formaldehyd were sufficiently hardened in three days, did not become brittle, and stained well, the cells retaining their original shape.

Formaldehyd, as shown by Slater and Tideal, when employed of such strength in weak alcoholic liquids as to be fatal to lactic and butyric acid organisms and other bacteria which produce injurious secondary fermentation, does not interfere with the growth of the yeast plant, nor does it hinder in any way the formation of alcohol. This fact has been turned to account in the brewing industry for producing pure cultivations of yeast, and preventing sourness, cloudiness or ropiness in the finished product; it should also prove equally useful in insuring soundness in such fermented liquids as orange and ginger wines, perry, cider, etc. The proportion necessary is from 1 in 20,000 to 1 in 10,000.

This illustrates a striking peculiarity in the antiseptic action of formaldehyd, for while it exerts an intensely powerful inhibitory effect on bacteria generally, especially those of putrefaction, in contrast it has but a comparatively feeble influence in preventing the development of the lower forms of plant life. Hence vegetable solutions preserved by its aid, though retaining their color and other physical characters to a remarkable degree, are exceedingly prone to develop moldy growths, etc., and if this is to be avoided, the

proportion of antiseptic must be increased to an extent far greater than required simply to arrest putrefactive change.

Meat, fish, etc., may be kept for several days during the hottest weather by placing in a well covered dish with a tuft of cotton-wool moistened with from four to eight drops of solution of formaldehyd. The antiseptic vapor does not communicate the slightest odor or taste to the meat, etc., and after considerable experience of this method I have never found it to fail to maintain the articles absolutely untainted for four or five days, even under the severest conditions of temperature.

Disinfection by formaldehyd vapor generated directly from methylic alcohol has lately attracted considerable attention. The simplest form of apparatus for the purpose consists of an ordinary spirit lamp provided with a coil or spiral of platinum extending about one inch above the wick. After lighting the lamp and allowing the platinum to become red hot, the flame is extinguished. The platinum continues to glow in contact with the air and methylic alcohol vapor, and the latter rising from the wick becomes partially converted into formaldehyd, the action being maintained as long as any methyl alcohol remains in the reservoir. In this apparatus a large proportion of the alcohol escapes oxidation, and in consequence several improved forms have been devised. In one resembling a plumber's blowlamp, a stream of methylic alcohol vapor is directed upon incandescent platinum; there are also air holes which can be so adjusted as to regulate the proportions of air and alcohol vapor; in this lamp the greater part of the alcohol is converted. Formaldehyd vapor may also be generated in an apartment by spraying the solution into the atmosphere, or heating it in an evaporating dish. Diffusion, however, is slow in the latter case, as has already been stated, and it is much better to allow the solution to fall drop by drop on a heated plate of metal. A handy arrangement for effecting this consists of a tin plate tray supported on the ring of a retort stand, and heated by a spirit lamp, the formaldehyd solution being contained in a glass separator held in an upper ring of the stand, and, by regulation of the stopcock, allowed to drop slowly on the heated tray beneath.

Careful experiment has shown that disinfection with formaldehyd vapor is most thorough and effective, the vapor diffusing very rapidly and penetrating everywhere, dust on the walls, in the air, and even

in cupboards being almost immediately sterilized. Owing to the irritating nature of the formaldehyd fumes on the mucous membrane and air passages, it is imperative that after disinfection by this means currents of air should be allowed to pass through the apartment for a quarter of an hour, and complete removal of the disinfectant should be insured by free ventilation for at least two days.

Of late the dental profession has taken up this agent for the treatment of pulpless teeth, the treatment of abscesses, and for devitalizing pulps, etc., and many are reporting most wonderful results from its use. Not long since I read an article in one of our journals in which the writer paid a most glowing tribute to this agent as a most efficient and desirable one for the treatment of nearly all conditions of pulpless teeth. Having had some experience with it myself, and because of some negative results experienced, having had my suspicions aroused as to whether it was just the proper thing to be used about the mouth, I decided to investigate it as thoroughly as possible, and first I tested it as to its antiseptic properties, and found it to be a powerful antiseptic—the formalin preparation, which is a saturated solution of the gas formaldehyd in water, being nearly as potent an antiseptic as the oil of cassia. In 10 c. c. of sterilized mutton broth $\frac{3}{10}$ D. of oil of cassia prevented development of bacteria, while it required $\frac{4}{10}$ D. of formalin to accomplish the same result. This renders formalin potent as an antiseptic in 1 to 1,400 parts. Somebody has been so enthusiastic over this agent as to make the statement that it is fully as potent an antiseptic as is bichlorid of Hg. This is certainly a mistake. I prepared a 1 to 1,000 solution of bichlorid of Hg. and found it required 9 D's. of this solution to prevent development of bacteria in 10 c. c. of broth. I prepared a 1 to 1,000 solution of pure formaldehyd, which we have now in a solid state—the gas being reduced to such by chemical processes—and of this solution found that it required 30 D's. to prevent development of bacteria in 10 c. c. of broth. Thus proving beyond the possibility of any doubt that formaldehyd is not so potent an antiseptic as bichlorid of Hg., by at least threefold. I next resolved to determine its ability to irritate soft living animal tissue—the same as I have done, during the winter months, with nearly all the agents we use. I took a small pellet of cotton, saturated it with formalin, placed it in a small rubber cap to prevent evaporation, placed it on

ous matter being thrown off through the medium of a severe diarrhea, and also much vomiting—the former continuing for a period of three days, the latter for one day, since which time my physical condition has rapidly improved. The sore itself, however, is still a very ugly looking affair.

Having seen a number of cases that have been treated by physicians with various per cent solutions of formalin in which more or less sloughing of the soft parts has resulted—one which I saw only the other day in which as low as a two per cent solution was used, in connection with which considerable sloughing resulted—and also because of the very vivid recollections of my own personal experience with it, I have about come to the conclusion that we can get along very nicely without it in the treatment of diseased conditions about the mouth.—*Dental Review*, *May*, *1898*.

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POINTS. By H. D. Weller, D.D.S., Indianapolis. A sharp pointed penknife is very useful for trimming around plain teeth. * * * Broken pieces of glass are sometimes preferable to a rubber scraper in finishing vulcanite work. * * * If a small wooden handle be attached to the soldering pliers many a slight burn and by-word may be avoided. * * * It is always a good plan to have a solution of bicarbonate of soda on the laboratory work-bench to neutralize the sulphuric acid after pickling any kind of metal work. * * * The first essential point in putting in a good amalgam filling is a carefully prepared cavity, the next is absolute dryness of the amalgam while under manipulation. * * * Felt wheels such as are used on the dental engine are very useful on the laboratory lathe for polishing parts difficult to get at with the regular laboratory cones and wheels. * * * Jewelers' files are very useful in crown and bridge work. Much more can be accomplished with small files, especially around the crowns where bridge teeth have been anchored. * * * Before going to the chair to operate, wash the hands well with hot water and spray with good toilet water. The hot water will soften the hands and the touch will be more delicate. * * * Instead of decorating the floor and cuspidor about the operating chair with waste cotton, sandpaper disks and strips, have a small waste-basket handy at your right to receive the same. It will look more refined to your next patient. * * * A good matrix retainer for amalgam work if the filling be an approxi-

the surface of the skin of the lower part of my right leg, and covered it over with a large piece of court plaster, stuck tightly about the edges. This was placed there three weeks ago last night at 12:30 o'clock. I went to bed and went to sleep. Between four and five in the morning I was awakened by the pain, and could get no rest after that. The pain was quite intense and of a very peculiar character. It seemed as if something were inside my leg gripping it as if in a vise. Then it would take a turn and twist about, as if tearing the inside of my leg out. It would stop for an instant, and then the performance would be repeated again with renewed vigor. The pain continued more or less severe all day. I wanted to keep it there for twenty-four hours—the time adopted for other agents; but at the end of twenty hours the pain had been so constant and the tissues began to look so ugly that I concluded to remove it, and well it was that I did. The tissue to which it was applied and for about two inches in all directions was as white as pure snow, as if all the blood were driven from the parts. The pain was lessened very considerably within a short time after the application was removed. The tissue to which it was directly applied was perfectly anesthetized, and to a considerable depth. Just at the circumference of the application there was considerable tenderness. There was much swelling, which latter seemed to be more like that of œdema than of true inflammation. In about two or three days some color began to return to the parts, except the part to which the agent was directly applied, which latter never regained its color. In about two days more a line, purple in color, began forming at the circumference of the point of application—a line of demarkation—and it became apparent there was to be a break in the tissue, and that more or less tissue was to be lost. This break occurred and sloughing took place; more or less tissue was lost all over the surface of the inflamed area. The tissue in the center raised about the edges, but was very obstinate about coming away. It was only yesterday morning that it did come away, and then only after having been severely persuaded. From the time the agent was thoroughly absorbed in the tissues, physically I was not up to the standard; the appetite being more or less impaired, the digestive and eliminative organs being somewhat interfered with. These conditions continued to grow worse until the climax was reached a week ago last Friday, in the form of quite a severe case of systemic poisoning, the poison-

mal: First fit a very thin band of German silver around the tooth, making an overlap on the lingual surface, then adjust a tight-fitting rubber-dam clamp over the middle part of band. * * * A good local anesthetic which will not cause sloughing or any other ill results: Cocain, 12 grains; Atropia, 1-6 grain; Carbolic acid, 8 drops; Aqua dis. ad. 1 oz. Sig. Inject from five to ten drops and immediately operate.—*Indiana Dental Journal, May, 1898.*

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EROSION. By Frank Acker, D.D.S., Cleveland. Read before Cleveland Dental Society, Feb., 1898. The term "erosion" as used in dental pathology is the name given to a peculiar destructive process of tooth substance. The phenomena in respect to location, shape, color, hardness and smoothness of the part affected differ sufficiently from ordinary forms of decay to permit the use of a distinctive appellation. Erosive cavities are most frequently found on the labial and buccal surfaces of teeth, especially the right anterior teeth, though there are instances of their occurrence in proximal positions or even extending across the incisive edge and on the lingual surface toward the gums.

According to Black, the incisors are most frequently the seat of this affection, and next in frequency the cuspids. Bödecker would give the cuspids the first place. One tooth is rarely affected alone, but similar lesions appear within a few months on adjacent teeth. Yet there is no law of steady progress and symmetrical extension on both sides of the tooth first attacked. Often the destruction is greatest at this point, diminishing gradually with the distance from that point—seeming to indicate dependence on time, but there are many exceptions to this rule also. The cavities vary in extent from a simple groove, generally running mesio-distally to an expansive area almost covering the face of the crown. Grooves running lengthwise on the labial and those running from labial to lingual on approximal surfaces are rare. Generally a portion of the enamel, about half line in breadth, next to the free margin of the gum, retains its integrity. Bödecker believes the gum is always somewhat inflamed and retracted.

The shape of the cavities also varies greatly. A common form consists in an abrupt descent of the cavity wall nearest the incisive edge, with the floor of the cavity gradually slanting toward the surface, making the angle at the gum margin much more acute. This

condition has been observed reversed. Or from all sides the slope may be the same, making a saucerlike depression. The position of the tooth in the arch, as to prominence, or if twisted on its axis, has been noted to affect the shape and extent of the cavity. Black had a case of shortening of the incisors that could not be explained by abrasion, as the occlusion was such that these teeth could not meet.

Discoloration is slight if it exists at all, except when complicated with decay. The pulp is rarely exposed. A formation of secondary dentin takes the place of this pulp and its outline is distinctly visible in deep erosions. The eroded surface is hard, smooth and shining. In ordinary decay the brokendown remains of the mineral and the soft animal matter furnish clues for investigation. The presence of bacteria in the dentinal tubules can be demonstrated microscopically, and by chemical analysis the presence of acids. But erosion when found uncomplicated with decay presents a much more difficult problem of etiology. This imp of Satan takes special pleasure in climbing mountains of difficulty—the perpendicular icy walls of enamel being unable to trip him. Bearing a banner with a strange device "Erosion" he marches on, leaving no traces of his implements behind him, only the accomplishment of his awful purpose.

That the cause is merely mechanical, as of a tooth-brush, is improbable, because the discontinuance of a tooth-brush was noted to have hastened, if anything, progress in at least one case. That it is simply chemical action is equally untenable, or the process would not be localized as it is. In an experiment on two bicuspids out of the mouth an artificially produced constant current of an acid fluid was directed at an angle toward the interproximal space and resulted in cavities similar to approximal erosion; but this does not prove that this is the method in which erosion accomplishes its work in the mouth, because such constant currents have not been demonstrated. In some cases the mucous membrane of the lip has presented elevations fitting into the cavities, and giving some grounds for the absorption theory, but such approximity of tissue capable of absorption is not always demonstrable. That electrolysis may have some part is admitted, but that it wholly explains is denied by such men as Black and Swain, of Chicago, who have experimented in this direction.

How ordinary cavities of decay occur in similar positions, as on smooth surfaces habitually unclean from any cause, for instance

mouth-breathing, also at or near the junction of enamel and dentin, due to acid mucus or absorptive processes. Class III. and IV. Black. By a simple experiment—painting the labial surfaces with a mixture of lamp-black and alcohol and then, when dry, permitting the normal action of the lips, I find the prominent points most quickly cleaned and the pits and grooves retain the lamp-black longest. The prominence of the gum also protects a little strip near the margin on the neck of the tooth. Then bring the tongue into play and it will be found that the longitudinal grooves are much more readily cleared than the mesio-distal. In the lower teeth I also observe that the lamp-black finds its way to the lingual through the approximal spaces and is soon apparent to the taste. This would indicate a current in that direction. I was unable to get a similar effect on the upper teeth. So then along the necks and in the mesio-distal grooves acid secretions would find the most propitious field for action. The comparatively easy access of tongue and lips to these parts might mechanically rub away the broken-down tissues at frequent intervals, leaving a smooth surface. Currents may be the mechanical cause in approximal spaces of the lower teeth. Since the question of etiology is still far from settled the treatment must be comprehensive and wide in range on this account. There are cases on record where the arrest of the process has come without operative interference—others where the ravages would most certainly have led to the destruction of the tooth if left alone. The past treatment appears to me to be as follows: When seen in the initial stages, prescribe the painting of teeth and gums with antacids, as magnesia, prepared chalk or talcum, before retiring; leave on over night. During the day frequent washes of antacid solutions, alternating with a simple pleasant antiseptic wash, such as 15 per cent boracic acid. Look after the general health or have the physician examine for cause of abnormal secretions. Watch closely, asking patient to call twice a month.

If the case has progressed further, so that the dentin is exposed and sensitive, touch with a solution of silver nitrate, freshly made by dissolving a crystal in a drop of water. This overcomes sensitiveness but may leave a dark stain. After a few minutes, if the stain is objected to, a slight undercut sufficient to hold a cement filling in place can be made with little pain. When at a later date the permanent operation is undertaken the kindly effect of the

cement will be apparent in reduced sensibility. But I see no good reason for putting off indefinitely the proper filling of such cavities with gold, for I do not find that anyone has proven the recurrence or continuance of destructive processes in this condition more frequent than in ordinary cervical decay.

Of eight cases which I had diagnosed as erosion, after more careful consideration I ruled out one as coming under the third head of Black's division of decay, and four under Class II. Three cases I am willing to give the benefit of the doubt and call erosion. No. 1. Man 55 years of age. Inferior left cuspid and superior first bicuspid smooth shallow labial cavities, with no discoloration or overhanging margins, but extremely sensitive. Have touched with Ag. NO_3 three times since July, 1895—process is arrested and no more pain; prescribed mouth-wash but did not use. No. 2. Young man, 19 years old. Smooth deep cavities in inferior left cuspid and first bicuspid and right first bicuspid; filled with gold before Feb. 17, 1897; are in good condition now. He uses tooth-brush without regularity. No. 3. Lady between 35 and 40, had typhoid fever three years ago, after which she noticed sensitive points on the molar buccal surfaces near the gum, but it passed away. Within one month it has begun to annoy her again, which brought her to me. Inferior left second and right first and second molars present shallow sensitive grooves but slightly discolored; no soft decay, hard and smooth; touched these with Ag. NO_3. At the next visit said greatly relieved, but found anterior teeth, especially cuspids and bicuspids, a fine white line near gum sensitive to instruments. Prescribed magnesia, local treatment, and will watch case.—*Ohio Dental Journal, May, 1898.*

* * *

IS DENTAL CARIES ACCOMPANIED BY INFLAMMATORY ACTION? By Dr. C. S. Beck, Wilkesbarre, Pa. Read before Union Meeting at Buffalo, Oct. 27, 1897. The idea of life in its simplest acceptation is that of vital activity, and obviously, therefore, involves that of change. We do not consider any being as alive which is not undergoing some continual alteration, however slow and obscure, that may be rendered perceptible to the senses. This alteration may be evidenced by growth of the organic structure, or by molecular changes in its substance which do not produce any ostensible increase; or it may be most obviously manifested in movements such as cannot be attributed to any physical cause.

debilitation, influence, excitement, previous disease, present disease, hereditary constitution, temperament, age, sex, and occupation. Local causes of inflammation comprehend irritants, whether mechanical, chemical or vital. A grain of sand in the eye, a thorn in the skin, or a wound in the flesh, are some of the mechanical irritants; chemical irritants are such agents as operate on living matter by strong chemical affinity and tend to alter or decompose it. Heat, strong acids and alkalies, various salts, etc., such act in like manner on dead texture. Vital irritants are various agents which produce no effect on dead animal tissue, and whose irritating operations are not referable to any known chemical property; of this kind are cantharides, mustard, capsicum, and the essential oils.

If the web of a frog's foot be placed under the field of the microscope so as to bring to view the circulation, and one of the essential oils be applied, the following phenomena present themselves: The red corpuscles of the blood lose their circular form and adhere together; the white corpuscles remain apart, and are often more abundant than usual. This is inflammatory action. If the cellular or serous membrane be affected, the inflammation is more active than when the mucous membrane or skin is affected. Inflammation may end by resolution, suppuration, gangrene, adhesion, effusion, or induration. For instance, when the effusion takes place between the bones and periosteum it may terminate by absorption, or be converted into pus, or become organized into fibrin and the fibrin into true bone.

Caries of the bone is an inflammatory process called osteitis, and has its origin in the soft parts of the bone and erodes its hard tissue; but in the tooth the carious process has its beginning in the hard tissue and spreads to the more vascular, the dental pulp. The human tooth has entering into its formation the following tissues: the pulp, dentin, enamel, and cementum. The pulp occupies the center of the tooth, and consists of a rich plexus of blood-vessels and nerves, held together by connective tissue. Covering the periphery of the pulp is a layer of cells called odontoblasts; passing from these are processes, some of which enter the canaliculi of the dentin, and some pass laterally to connect with other odontoblasts, while others connect with cells which lie more deeply and are called pulp processes.

The dentin is an organized matrix highly impregnated with cal-

The life of any complex organism, such as that of man, is in the fact the aggregate of vital activity of all its component parts, and no fact has been more clearly ascertained by modern physiological research than this. In every living structure of a complex nature, while we witness a great variety of actions resulting from the exercise of the different powers of its several component parts, we at the same time perceive that there is a certain harmony or coordination among them all, whereby they are all made to concur in the maintenance of the life of the organism as a whole; and if we take a general survey of them with reference to their mutual relation we shall perceive that they may be associated into groups each consisting of a set of actions which, though differing among themselves, concur in effecting some positive and determinate purpose. These groups of actions are termed functions.

In the present advanced state of anatomy, physiology, and histology every shadow of doubt as to the human teeth being living organs has passed away. We see nature very early in uterine life making provision for the development and growth of the teeth. We see too that they are connected to the general system, and derive their nutritive supply, like all other organs of the body, from the circulation of the blood. If these physiological facts be true, may not the teeth be subjected alike to some of the diseases which other organs are heir to? From the material supplied in the food there is prepared by the digestive and assimilative process the blood. Upon the circulation of the blood through all parts of the fabric depends the nutrition of the tissue.

Disease is a state opposite to that of health, consisting in a change either in the position and structure of parts or in the exercise of one or more of their functions, or in both. If any one of the organs or tissues of the human body be irritated, it is occasioned by some stimulus, which stimulus causes an increased flow of blood into the capillary vessels; these vessels become overdilated and enfeebled, the results of which are pain, redness, heat, tenderness, and swelling. These symptoms will appear in greater or less severity, according to the structure, vital properties, and function of the parts affected and their connection with other parts, as well as according to the constitution of the individual; this we call inflammation.

The predisposing causes of inflammation are the same as those arranged under the head of predisposing causes of disease—viz.,

cium salts; traversing it are innumerable canaliculi which have their origin in the pulp-chamber and ramify in every direction toward the enamel and cementum. Each of these tubes is occupied by living fibers; these ramify and pass through the walls of the canaliculus into the basis-substance, forming a net-work of living matter and anastomosing freely through the dentinal tissue.

The cementum is traversed by cavities which contain nucleated bodies similar to the Haversian canals found in bone; from these nutritive cells are sent off delicate branches which anastomose freely in the basis-substance with those sent off by the dentinal canaliculus. In the enamel we also find living matter in the form of very delicate fibers; these send offshoots into the cementum. We have a complete plexus of living fibers in all the tissue of the teeth, and they ramify freely one with the other; then the tooth, as a whole, is connected with the jaws by the periosteum which invests its roots.

We must then admit the tooth to be a living body, and that it is subject to any morbid process which will react upon the living matter of the tooth, just as on any other tissue of the body.

Dental caries has been the subject of much thought and study among some of the talented and ablest physiologists and pathologists both of this country and Europe. From the days of Hippocrates up to the present time several theories have been advanced as to the cause of dental caries. Hippocrates and his pupils were humoral pathologists, and hence they referred caries to a bad condition of the humors. These views were held for over a thousand years. Fauchart took a great deal of pains to discover the worms supposed to be in most cases of decay, but never succeeded. Hunter, with his false physiological views, regarded the teeth as foreign substances in a certain degree, and they only received nourishment when sound and fit for use. Fox considered the proximate cause of dental caries to be an inflammation in the bone of the crown of the tooth which, on account of its peculiar structure, terminated in mortification.

The present theories are the vital-chemical, the electro-chemical, and the parasitical. To enter into a discussion of these several theories would be foreign to this paper; suffice it to say that to-day, in spite of all the researches which have been made, we are not clear upon this subject. One thing we do know, that death of the dental tissue is preceded by their decomposition. We know that one condition has occurred by the presence of the other. We also know that

the human tooth is a living organism, that its connection with the general economy is similar to that of other organs. It is supplied from the circulation with blood. Its pulp-tissue is a rich mass of blood-vessels and nerves. From its protoplasmic bodies pass fibers which traverse its entire structure. That these are facts favorable to inflammation, when subjected to irritating causes, I think cannot be denied. We have seen that the degree of inflammatory action depends on the condition of tissue affected. How do these living fibers which pass into tooth-tissue induce the flow of blood, or some other fluid which carries the calcifying material and deposits it at the line of demarkation, which is to be found in all teeth affected by dental caries? This barrier is situated between the pulps and devitalized dentin. We are told that it is produced by the consolidation of the canaliculi of the first line, which being destroyed by the advancing disease, a second is thrown up, and one after the other until the pulp-tissue is reached, and it in turn becomes subjected to irritation and inflammation which induces it to renew its formative function; this is what we hope to bring about when we cap an exposed pulp. This vital act, this self-protective principle, does seem to be accompanied by more or less inflammatory action. May it not be possible that this line of separation between the dead and living is a fact similar to that which takes place in other tissues of the body, and which the surgeon sometimes waits for before operating? May it not also be analogous to that which occurs in the soft tissue when inflammation advances toward abscess?

When the devitalizing of an exposed pulp was a common practice, we frequently saw the dentin colored red. The view then entertained was that the blood-corpuscles were broken up, and hemoglobin or coloring matter of the blood was liberated and passed into the tubes of the dentin. In former years I have frequently met with teeth colored in this way. In some instances the discoloration would pass off in from twenty-four to twenty-eight hours, but in many cases become permanently fixed. We have merely a hypothesis as to the true cause of discoloration. Those of you who have seen the circulation of the blood in the web of a frog's foot noticed that the blood-corpuscles do not always retain the spherical form as they pass along the vessels; their figures sometimes become elongated or contracted in the center as they pass around the corners, so to speak, or pass from one vessel to the other.

At what point in the capillary system the arterial blood is converted into serous, or the arterial blood gives off its nutritive properties, is not known. We know the pulp is abundantly supplied with blood-vessels and nerves. Now if the line of demarkation found in the teeth affected by caries be the product of a deposit of lime-salts in the canaliculi, how and by what means are these salts carried to the line of demarkation? Is there any other vehicle but the blood to convey them?

Histology is only in its infancy, as connected with dental anatomy. To-day we admit of living matter in the dentin, cement and enamel. With these truths in view, may it not be reasonable to suppose that dental caries, in part at least, is accompanied by inflammatory action?

Every dental operator knows that there is such a thing as sensitive dentin; if he doesn't, his patients are not long in informing him of the fact. What is the pathology of sensitive dentin? When our patients ask, What is it that hurts so? the reply is, Sensitive dentin. And pray tell me what is sensitive dentin? Some authors tell us that it depends upon its connection with the pulp, and others that there is a possibility of actual nerve-fibers. If you admit one of these theories there is a possibility of an artery, for nerve and arteries accompany each other. If you admit the one I do not see how you can omit the other. If you acknowledge both, you must admit of inflammation. We sometimes meet with cases in which caries has been arrested, and the parts, though dark, have become hard, consolidated, and highly polished. We might ask how this change is brought about. Is it that the vital parts have overcome the destructive agent? If so, has it not been preceded by an inflammatory action? A more common occurrence in practice is to meet with cases in which the teeth are worn down quite to the margin of the gums, and without any pulp exposed. The pulps in these cases have resumed their formative power and deposited new dentin. This, I think, is due to more or less inflammatory action.

In teeth of delicate structure, and particularly those in which the tubuli are large, a considerable amount of pain is felt upon the removal of the disorganized tissue. Teeth that have been excavated and their tissue left exposed to the action of the secretions of the mouth, in a short time become painful and highly sensitive to the slightest touch. These are conditions common to inflammation. Pain is frequently felt in the progress of dental caries long before

the pulp is exposed. A number of patients are able to tell when their living teeth are decayed, from the unpleasant sensation which they feel. In these, then, do we not have nearly if not quite all the symptoms accompanying inflammation? The severity of its action depends upon the quality of the tissue and the state of the system, whether it be above or below the standard of health. These are some of the causes which lead me to believe that dental caries is accompanied by inflammatory action.—*Dental Cosmos, May, 1898.*

MOUTH WASHES AND ECZEMA.—Neisser reports several cases of obstinate eczema of the lips which at first defied all treatment. In the end it was found that after the use of certain mouth waters and tooth powders containing oil of peppermint and oil of cloves had been discontinued, a rapid improvement and even complete healing ensued. The worst effects are said to be produced by the use of odol, which has the following composition: Salol, 3.5; alcohol, 90.0; distilled water, 4.0; saccharin, 0 2; ol. menth. pip., ol. anisi, ol. fœniculi, ol. caryophylli, or ol. cinnamoni to flavor.—*Therap. Monatsch., xii., 79.*

DETERMINATION OF IRON, CALCIUM AND ALUMINUM IN THE PRESENCE OF PHOSPHATES.—In order to curtail the very tedious and not too exact process generally employed in the determination of these metals, by oxidizing the solution of ammonium citrate after the phosphoric radical has been precipitated as the magnesium salt, the filtrate from the phosphate is concentrated and then oxidized, as suggested by Villiers, by the addition of a trace of manganese salt, or better still, of vanadium oxychlorid, in the presence of nitric acid. If a solution of vanadium salt of known strength be used, there is no need to separate this from the iron precipitate, as both are collected and weighed together, the known weight of the vanadium oxid being deducted from the total. According to Lindet, the separation of iron, alumina and calcium in the liquids in which the citric acid has been oxidized in this manner is easily effected in the ordinary way. This is a great improvement on the old method of calcining the mixed ammonia-citrates.—*Comptes Rendus, cxxv., 246.*

FOREIGN BODY IN THE NOSE.—Breitung, of Coburg, reports a case of a boy five years old who had suffered for three months from loss of appetite, disturbed sleep, and a bloody purulent discharge from the nose. The skin over the nose and neighboring part of the cheek was swollen, slightly reddened and sensitive. The upper lip was ulcerated by the bloody, bad-smelling discharge. Nostril was completely blocked. Examination revealed a mass covered with pus, which was removed with forceps. It proved to be a piece of meat, which the author thinks must have been forced into the nose by coughing. He points out the danger of forcing pus into the ears in these cases by either inflation or syringing through the other nostril.—*Deutsche Med. Woch.*

Letters.

NEW YORK LETTER.

To the Editor of the Digest, NEW YORK, June 18, 1898.

MR. EDITOR:—We much enjoyed reading the illustrated interview with Dr. J. Leon Williams of London; a new interest was added by being able to see how he looks. There are undoubtedly many men in other countries whom it would be a pleasure to hear from and to see.

We wish to take issue, however, with Dr. Williams' remark, that it matters very little what a dentist's personal surroundings are, for we do not believe he really meant it. If they are not congenial, that atmosphere will surely follow him into his office.

What he says about ethics cannot be improved upon. The quicker much of this bosh is done away with, the sooner societies will become more attractive. We would again call attention to what Dr. Roosa stated at a recent meeting of the New York Institute of Stomatology: "In New York State we have abolished the code of ethics and are now counseling with all kinds of doctors, not because we think alike in all respects, but because they are intelligent. Because of this we are tabooed by the regulars, but we have never advanced so rapidly in the true professional spirit." Legislation is in the same tangle, and the way it is conducted is a damper on all real progress.

If you want something exciting don't read the thirty-page article on cataphoresis in the *Items* which follows Dr. Williams' interview. Brooklyn has been in a trance ever since the article was read there; probably due to association of ideas.

Dr. Lenox Curtis has recently had an operation for appendicitis, but is now back in his office. What is the matter with the dentists and physicians? We have heard of so many who have been afflicted in this way.

We have questioned Dr. Curtis concerning the use of volasem as an antidote to cocain, and he emphasizes its value, stating that its action prevents the depressing effect which so frequently follows the use of cocain. It neutralizes the general effect, but does not alter the local action, and it sustains a cardiac and respiratory function. The dose is one to three drops in a teaspoon of water taken immedi-

ately before the injection or application of cocain, and a second dose can be given if necessary.

Dr. Arthur R. Gage died June 4th of consumption in Liberty, N. Y. He was forty-seven years old, and a son of Richard M. Gage, also a dentist, and was born in Boston. He graduated from the Philadelphia Dental College, and had practiced in New York since 1878. Dr. Gage was an unassuming gentleman, but always attentive to the interests of his calling. We remember his father, whom he was much like. His uncle, a wealthy practitioner in Paris, during the Franco-Prussian war had his chateau burned by the Prussians.

We see by the New York press that Dr. Evans' estate is to be contested in Philadelphia by his relatives. How little wisdom is manifested in this matter of bequests. How much better it would be to carry out one's wishes while alive. Dr Evans was urged to do this but neglected it. We trust the project will not now fail, for we know that he had some radical views regarding the training of dentists which were far more practical than any now in vogue. His ideas were strongly emphasized by the late Dr. Atkinson, for when Dr. Evans was here in 1876 they spent nearly one whole night in consultation over this matter, and for a time Dr. Atkinson lived in hope that he might see an institution suitably endowed in this country for the education of dentists, on the plan so successfully carried out in a limited way in his own office, viz., educating the student at the chair over the patient, and further by conversational teaching. Could this method be carried out by men chosen for their fitness to teach in this way, we should soon see practitioners who would show a grade of work far ahead of anything that has yet been done. Such a method would give a prestige to teaching that never has and never will be given by the present run-wild system of infirmaries.

We see in the *Herald* of the 8th instant that the Register of Wills in Philadelphia has dismissed the caveat filed by the eight nieces of Dr. Evans, and the certified copy of the original will was admitted to probate. Let us hope that Dr. Evans' wishes will be fulfilled.

From private sources we learn that the Massachusetts State Dental Association meeting, held in Boston the first of the month, was unusually successful. The program showed a purpose to exhibit

what practitioners can do with the mouths of their patients, and the clinics were a source of much pleasure to those who witnessed the skill and display. We understand that the papers and report of the meeting are to be published in the DIGEST.

On all sides we heard the complaint that times are decidedly hard and that the only place where the practice of dentistry is lively is in the dental colleges. It is remarkable how business depression acts on the mind. We remember being at the meeting in 1877 in Baltimore, and Dr. Atkinson was so down in the mouth after he had returned home that he contemplated leaving New York and locating in Baltimore. Before long, however, he found that times picked up and were not really so bad as he imagined.

You can't teach old dogs new tricks. Dr. Farrar has taught us a little something new, however. Force will put teeth where you want them, and so comfortably. Think of the patient getting up in the morning, and after winding up his watch, he then winds up his teeth. Patients well past middle age, with a congenital separation at the symphysis, find it a pleasure to see it close up day by day. We tried it with rubber bands, but life is too short.

We have read Dr. Bonwill's recent article on "Cataphoresis vs. Direct Application of the Galvanic Current for Obtunding Sensitive Dentin, and how to Exclude Both." Most of us are familiar with what he has said among these lines, and while all his statements are probably borne out by the facts, we think that he is in error to expect that he can ever bring all men to his own ideas.

Cordially, NEW YORK.

NEW JERSEY LETTER.

EAST ORANGE, N. J., June 18, 1898.

To the Editor of The Digest,

MR. EDITOR:—Another month has rolled around, bringing its share of pain and pleasure (the former to our patients and the latter to us both).

On the 4th instant Dr. Riley, President of the Central Dental Association, tendered the annual dinner to the officers and the executive committee of the society, at the New Continental Hotel of Newark. For the first time outsiders were present at this dinner, among whom were Drs. Dwight L. Hubbard and R. Ottolengui, of New York, and L. Ashley Faught of Philadelphia, who all responded

to toasts. The dinner was a unique affair and much enjoyed by all present. It reflected great credit upon our worthy president as a host and proved that he could preside at the festive board as well as at the regular meetings of the society, with grace, dignity and tact.

Notice was given that the summer meeting of the board of examiners will be held early in July. The new law is now in force, and its character being so definite and strong, it would seem that the board should make an attempt to wipe off that blot upon the profession—illegal practitioners. We know there are many such and they should be stopped, and that quickly. The law is on the side of the board and the future rests with them. New Jersey is not alone in this respect, but a start made here might bear fruit elsewhere, to the good of the profession at large.

Protests are being made in many quarters, we understand, about the meeting of the National Association being held at Omaha, where adequate and comfortable accommodations cannot and will not be given to the many delegates who will attend the convention. The committee in charge should pay heed to these murmurings and not run the great risk of spoiling the whole meeting, especially at its first session under the consolidation.

Notice has been given of a bill introduced in congress for the appointment of dental surgeons in the army, two to each brigade, to hold the rank of major and captain. This is a good measure and should be pushed to passage, and the wisdom of it appeals to the good sense of the community. It is impossible for soldiers to do effectual duty if unable to masticate their food, or when suffering with toothache or alveolar abscess, and in this day of war the necessity of every man in the army being able to do his whole duty is brought prominently forward. No better time could therefore have been chosen for the discussion and passage of such a measure.

Several journals still keep up their fault-finding with the National Association of Dental Examiners. It may be noted, however, that the board is stronger and more united and has a larger representation from the various states than ever before.

The Central Dental Association, although adjourned until autumn, is not inactive. Its executive committee have papers arranged for next year's sessions and are getting up a good list of clinics. Keeping everlastingly at it brings success.

A peek was had at the program of the state meeting in July at

Asbury Park, and the array of clinics is surprising. They should and no doubt will call a great number of the profession from the suburban sections of the state, as they cannot afford to be behind the times in anything. The papers are to be of a high order. Dr. Wm. H. Trueman of Philadelphia will give a paper on Materia Medica, and we need not say it will be most interesting. Anything from the pen of this writer is never of a low order, and in this he is dealing with a subject he is eminently qualified to write upon.

Cordially yours, HORNET

PHILADELPHIA LETTER.

Dear Digest: PHILADELPHIA, June 20, 1898.

That is an interesting question your editor asks in the May number: "What causes the lack of sociability in our profession?" It could no doubt be answered something like this: First, the commercial spirit; then politics—the desire many men have to fill petty offices, the wire-pulling and other work of uncertain character which this entails; and lastly, cliques. From our observation, and it extends over many years, we have yet to see the dental society where perfect harmony prevails, principally because each one is made up of two or more factions which frequently display feelings not conducive to good fellowship. It is very unfortunate that this is the case, and the youngest men in the ranks are not always to blame. Even here in Quakerdom it is too often seen, and sometimes we get it in doses that cannot well be called homeopathic. The condition of affairs in our state society during the past two years is an example. A selfish spirit seems to control the hearts and pocket-books of many of our best known men. Even when asked to do very small things, such as to assist the Protective Association, they ask "What is there in it for me?"

Hence it seems to us that the whole matter can be summed up in the one word selfishness. It has been said, "the world is full of kindness that never has been spoken." This to our mind is not much better than no kindness at all. If one has any generous or brotherly feelings, and keeps them a profound secret as though it were a crime, he is no better than the man who is void of many of the finer sentiments of life.

The members of the Academy of Stomatology let down the bars and were sociable one day recently. Thirty-five or forty of them

met at Essington on the Delaware River and partook of a planked shad dinner. A very pleasant time was had, professional matters and interests seemed to be dropped for the occasion, and they were all boys again, with Drs. Robert Huey and John Thomas as umpires.

The dental colleges as well as the local societies are through with their work until another season, so professional matters seem very quiet at present. The colleges of Philadelphia sent about three hundred and fifty new recruits into the ranks this spring. If this be kept up year after year, and other cities furnish a proportionate number, the question arises, what shall we do with the new graduates? Uncle Sam may make a bid for them, now that he is enlarging his possessions and increasing his standing army. However, this is a problem for the future, and the new graduates take our best wishes with them.

We were glad to have a glimpse of Dr. Crouse on the streets of Philadelphia the other day. He is so full of professional enthusiasm and Western push that he proves a stimulus to us easy-going Quakers. Cordially, THE SPECTATOR.

TEXAS LETTER.

SHERMAN, TEXAS, June 21, 1898.

To the Editor of the Dental Digest,

DEAR DOCTOR:—Well, I guess that you must think I have deserted the DIGEST, and gone to the war. Anyway I feel as if I had been through the war. You remember I told you in my last that we had a new dental law in Texas, and that the board of examiners had met and gotten through the business with less trouble than expected. We only thought we had gotten through, for we have since found out that we have hardly commenced. Believing that we had crossed the Rubicon, the board appointed a time for the second meeting at Waco, May 16th, just one day before our state association was to meet. We hoped to transact all necessary business in one day and then put in the rest of the time with the association, but it took us until 12 o'clock the night of the fourth day. If you have ever been so unfortunate as to have helped organize a new dental board you can appreciate the situation.

I had hoped to be able to report some of the proceedings of the association, but cannot do so for the reason above given. I understand however that they had a splendid meeting, nearly a hundred

being in attendance and more interest manifested than ever before. Come down some time and meet with us and we will promise to give you some Chili Conconi hot tamales and a hot time generally.

Yours fraternally, TEXAS.

BALTIMORE LETTER.

Dear Digest: BALTIMORE, June 20, 1898.

A promise is a wonderful stimulus, and the more formal the more exacting. I suppose this is why one's name must be signed to business papers to make them valuable, for behind that signature the business world recognizes not only the personality of the signer, but the size of his bank account and his property resources.

When I promised in my last letter to tell you in the next issue of our meeting, I confidently expected a more opportune occasion than the present, but the fulfillment of the promise is due and I can't afford to go bankrupt so I must borrow from other accounts to settle with you. Our Baltimore dentists have been looking forward to the Tri-Union Meeting for some time, so it was no surprise to find that many of the former stay-at-homes were promptly on hand at the opening session. The eloquence of the first address and the prayer for the eternal welfare of the universe were not unappreciated. Many of our Washington brethren came in later, and Virginia made up in regularity of attendance and attention to business for its sparse representation. Taking the attendance as a whole, however, the knell of Tri-Union Meetings has been sounded. No more showy and attractive program could have been furnished; the officers were on hand, but many of the representative men were missed. Southern courtesy prompted the sending of excuses, but they were much the same as those recorded in the parable of the feast and were probably entitled to as much credit. I am of the opinion that the Virginia dentists are the nicest fellows in the world if you can catch them, but they are hard to meet with. Much of the professional interest in the states seems to center in the examining boards, and if you want a collection of dentists you must reckon with the examiners.

If I could read the signs of the times in the papers and discussions at our meeting, this was an appropriate occasion for fencing on the part of the examiners, for impatience with dental legislation was

everywhere expressed, and the mutterings of discontent, strange to say, were not sounded principally by the college men.

Dentistry is a young profession, yet dentistry has led medicine and law into some extravagance and foolishness and much good. Dentistry organized its association of Dental Faculties and enacted its dental laws; medicine and law have tardily followed. The Association of Dental Faculties extended its course of study to three years; medicine went one better. The National Association of Dental Examiners in future years no doubt will find its counterpart in a similar medical organization, but as yet the medicos have not cared to follow this ambitious youngster. I predict that dentists will be the first to teach the wisdom of modifying and abolishing much of the foolish legislation that has been enacted. Proper sentiment points that way and you would as well try to check a stampede. To throw up one's hands and cry "shoo" is useless, the thing is doomed.

The enthusiasm and energy of our executive committee led them into some extravagance in procuring material for the meeting. Some of the papers seemed prepared solely with the view of satisfying a supposed obligation to the committee, instead of fully and fairly representing the writer's views. Many excellent papers were sacrificed by not being read by their authors. I believe it to be unfair and imprudent to *send* a paper to a dental meeting. If the paper presents views peculiar to the author, advocates novel ideas or theories, it is not apt to be understood, and the writer is unjust to his own child to thus thrust it among strangers. If a paper be so commonplace as to meet with no opposition, in the absence of the contributor it should not be allowed to take up the time. Again, papers presented to such a meeting should receive something more than a passing comment of those present; they should be previously submitted to sensible thinking men with a view to their intelligent discussion. This should be done not alone from courtesy to the contributor, but to save the reputation of those called upon to speak on the subject. On the whole the publishers of the proceedings of this meeting are to be congratulated that so much good reading is to be presented. The material was mostly devoid of the nauseous descriptions of venders of merchandise, and was clean, practicable and scientific.

The clinics were very successful, a few bordering just a little on the "pocket" character, but most of them novel and exceedingly interesting. You Western fellows must get Shumway of Massachu-

setts to come out and teach you how to use tin and gold. He can make it stick.

The exhibitors with novelties and staples crowded the building from pit to dome, and the humiliating scene of sample collection was not lacking. Many of the papers were read to a scattering few, while the exhibitors never lacked an audience. It can be truthfully said that an exhibition of the aids to the practice of dentistry is not in any way to be looked down upon, and where such a large number go to the expense of attending a meeting they deserve some consideration. The day before the meeting and perhaps one afternoon during the same should be given up to them and so announced on the program, but they should be closed up tight during the reading of the papers.

The visitors—but, oh! let me get my feathers smooth and borrow some of the liquid sweetness of your New York correspondent. I know you will think I am a common scold after all of this fault-finding. The visitors were to me the charm of the meeting. Home folks are all right, but everyone likes visitors once in a while. What is more interesting than to circulate around among one's visitors, finding something to admire, uncovering the charm of personality, strengthening the ties of friendship, swapping stories and experiences and having a good time. This truly makes us feel that life is worth while.

The banquet was successful, although the season was not propitious for good things to eat. The music and toasts were fine, and the mirth, the sentiment, and the good hard common sense drew us closer together and we were happier for the occasion.

I would like to tell you more of the meeting, but you must not publish an extra volume, so good-by.

Cordially, ORIOLE.

RAPIDITY OF THOUGHT.—To illustrate the rapidity of thought, a distinguished scientist says that if the skin be touched repeatedly with light blows from a small hammer, the brain will distinguish the fact that the blows are separate and not continuous pressure, even when they follow one another as rapidly as 1,000 in a second.

ANESTHESIA BY COMPRESSION OF CAROTIDS.—A French physician, M. Jabony, has obtained successful anesthesia without total loss of consciousness by compression of the carotids for a few moments. The anesthetic effects endure several minutes, which may suffice for the reduction of a dislocation, a simple incision, or setting of a fracture.

The Dental Digest.

PUBLISHED THE

TWENTY-EIGHTH DAY OF EVERY MONTH.

Editorial.

NATIONAL DENTAL ASSOCIATION.

There has been a great deal of discussion and some doubt expressed as to whether Omaha was the most favorable place in which to hold the initial meeting of the new organization. The general sentiment seems to be that the lack of proper hotel accommodations, which will be augmented by the crowds in attendance upon the exposition, will not prove conducive to a successful meeting. As this feature has been strongly urged by various members of the profession who have been there, we shall go to Omaha in a few days to investigate the matter carefully, and we will inform the members of the National in a short time of our judgment in the matter.

THIS MONTH'S MEETINGS.

It has been our pleasure and profit during the past month to attend the Massachusetts State Meeting at Boston, the Tri-Union Meeting at Baltimore, and the Tri-State Meeting at Put-In-Bay, O., and we have come away from each with a feeling of pride at the interest and ability shown.

We were especially impressed by some features of the Tri-Union and Tri-State meetings which do not obtain in ordinary meetings. For some reason they are more harmonious; politics are excluded and the social feature predominates. Each state finds it possible to transact all the necessary business in a very short period, and the greater part of the time is thus left for the program, for social commingling and the promotion of more extended acquaintance.

The programs presented an attractive array of subjects and speakers, and were open to but one criticism—length, a mistake more frequently made than any other by all societies in their arrangements. The clinics were not, perhaps cannot be made so pleasant and profitable as in smaller gatherings, but on the whole we believe there is a decided gain in this convening of the states.

EXAMINERS AND FACULTIES.

The National Association of Dental Examiners and the National Association of Dental Faculties will soon hold their annual meetings, and it seems a good time to discuss what is needed to reform or improve the standing of the dental profession. When it is remembered that these are the two governing bodies, and as matters now stand all improvement must come through them, the question of what they will do at this year's meetings is all important.

Arising in part from a disagreement between the two organizations, what was done last year was a hindrance rather than a help to the advancement of the profession. There is much criticism from various quarters about the methods of the state examining boards, and the universal opinion is that the Faculties' Association lost caste and did the profession a great wrong by lowering the standard previously adopted.

It is not our intention to discuss past mistakes or attempt to show who or what was to blame, but rather to urge the importance of wise action at the next meetings. The two bodies should work harmoniously and in unison, and the accomplishment of much needed reform will then be hastened, and much more successfully than is now possible with the two opposing each other.

Each state examining board should send its ablest representatives to meet with the National Association of Examiners, and thus aid in the great work needed of this body. Of all organizations the Examiners' Association have the greatest opportunity to improve the status of our profession. Clothed with the authority of the law, it is within their power to decide what the requirements shall be before granting a license. In order to fill such an important mission they should have every state board with them in the work.

There should be a uniform law for all the states, instead of as now with all the laws differing in many important respects. Out of all the array it should not be difficult to select one which is accomplishing its purpose, namely, to protect the community from incompetent and dishonest practitioners. If a uniform law could be adopted it would remove the necessity of examination whenever a dentist moves from one state into another. There is no limit to the amount of good the Examiners' Association can accomplish if properly managed.

In such a work every honest college should cooperate and thereby

effect a reform in the educational system, which we think is sadly needed. With about forty colleges in the Faculties' Association, and many outside of it, what is more needed than a legalized controlling board?

There are at present more practitioners of dentistry than can make an honest living, yet the number of colleges is on the increase, larger classes than ever have been graduated this year, and that means that more young men have been turned into an already overcrowded field. This wrong will be increased in proportion to the number of schools and the laxity of the requirements.

Therefore, there is plenty of honest work for the Examiners' and Faculties' Associations to do, and all who have the best interests of the profession at heart will watch their proceedings earnestly.

Notices.

CALIFORNIA BOARD OF DENTAL EXAMINERS.

The next meeting of the California State Board of Dental Examiners for examination will be held in San Francisco, the second Tuesday in August, 1898. All applicants should notify the secretary of their intention to take the examination. W. A. MOORE, Sec'y, Benicia, Cal.

WESTERN RESERVE UNIVERSITY DENTAL COLLEGE.

The annual commencement of the Dental Department of Western Reserve University was held Tuesday, May 17, 1898, in Association Hall. Rev. Dr. Louis Albert Banks delivered the graduating address, entitled "The Romance of Labor." Pres. Charles F. Thwing, D.D., of the University, conferred the degrees upon the graduates.

CHANGE OF PLACE OF MEETING FOR THE MISSOURI STATE DENTAL ASSOCIATION.

The 34th annual meeting of this association will be held at the Planter's House, St. Louis, July 5-8, 1898. All dentists practicing in the state, who are not members of the association and wish to become such, and dentists of other states, are cordially invited to attend. When purchasing the railroad ticket, remember to secure certificate from agent, so that rebate can be secured on return ticket. A large attendance is anticipated, and we are assured a profitable meeting. All dealers who desire to make exhibits can secure space by writing to the Planter's House. The change of place of meeting from Merrimac Highlands to the Planter's is caused by the failure of the Highlands to open this season. The papers will be published in the DIGEST. H. H. SULLIVAN, Secretary.

LATEST DENTAL PATENTS.

603,731. Tooth-powder box, Charles Millington, Clifford, England.
603,803. Dental impression material, Louis L. White, San Francisco, Cal.
604,355. Dental disk-mandrel, James E. Keefe, Chicago, Ill.
604,363. Artificial tooth for crown and bridge work, Francis N. Brown, Chicago, Ill.
604,692. Fountain spittoon, Theodore N. Clark, Toronto, Canada.
604,562. Disinfecting apparatus, James Evetts, assignor to Red Cross Hygienic Company, Chicago, Ill.
604,836. Dental engine, Arthur J. McDonald, Kansas City, Mo.
604,837. Dental engine, Arthur J. McDonald, Kansas City, Mo.
604,890. Rubber-dam holder, William M. Seeger, Louisville, Ky.
605,171. Dental plugger, Francis S. Avil, Philadelphia, Pa.
605,403. Dental bridgework, Charles A. Davis, Passadena, and E. L. Townsend, Los Angeles, Cal., said Townsend assignor to said Davis.
605,223. Apparatus for swaging dental plates, John H. Gartrell, Penzance, England.
605,255. Dental chair, Mont C. Merker, Philadelphia, Pa.

(List furnished by John A. Saul, patent attorney, Washington, D. C.)

NATIONAL DENTAL ASSOCIATION, SOUTHERN BRANCH.

Judging from the letters received, it is evident that there should be a wider diffusion of information in the south regarding the National Dental Association and its branches. In many of the states the law does not require a diploma as a prerequisite for license. These state societies which admit to membership all licensed practitioners, *regardless of diploma*, should therefore bear in mind that only their graduate members are entitled to election as delegates to the National Association and its branches. It should be made very clear that according to the constitution these bodies accept as *new* members only *delegates* elected by ballot at a regular meeting of the *state societies*, and also that delegates must be *graduates* in dentistry, or have acquired the degree of M.D., or have entered the profession prior to September, 1875. The American and the Southern Dental Associations did also, it is true, require graduation as a prerequisite for membership, but as they did not restrict their eligible applicants for membership to *elected delegates* from *state societies*, this feature should therefore be emphasized. The requirements for membership in a branch of the National must necessarily be the same as in the National itself, as membership in the former confers membership in the latter. The above applies both to qualifications and to dues, which are $5.00 in either case, but it should be borne in mind that if the dues are paid directly to the treasurer of the National this does not pay dues in the branch, but the payment of $5.00 to the treasurer of the branch cancels all financial obligations to the National for the ensuing meeting, because the branch forwards to the National three-fifths of the dues received. Payment of dues to the branch therefore insures for *a single fee double membership*, with all the rights, privileges and benefits of *both* bodies, including

the joint volume of transactions. By request of the president of the southern branch.

C. L. ALEXANDER,
Cor. Sec'y Southern Branch National Dental Association.

WASHINGTON STATE DENTAL SOCIETY.

The eleventh annual session of the Washington State Dental Society convened at Tacoma, Wash., May 16–18, 1898, in the rooms of the Tacoma College of Dental Surgery, with the president, Dr. R. B. Gentle, in the chair. The different sections of the state were well represented and a fair attendance was present. The report of the executive committee showed much effort, and great credit is due Dr. B. F. Eshelman for the well arranged program.

After routine business had been transacted the president read his annual address. He called attention to the increase of business since the Klondike gold-fields had been opened up and the encouraging outlook for the dentists of the far northwest. The Washington State Board of Dental Examiners was urged to become a member of the National Association, and to cooperate with it in formulating a plan whereby a more uniform system of examinations could be put in operation, as this would not only benefit the dental profession but also the people for whom they work. The state dental law as a whole was commended, but an amendment was needed whereby an applicant could obtain a temporary license and not have to wait six months for the board to meet.

The general discussion which followed resulted in the appointment of a special committee to investigate the subject of enforcing the dental law relating to bona fide students and illegal practitioners, and devise plans for dealing with transgressors, as follows: Drs. C. L. Erwin, P. H. Carlyon and W. E. Burkhart.

On the suggestion of Dr. B. S. Scott the president appointed individuals as special committees to report on the several clinics to be given during the day, and it proved to be a time-saving plan, for no time was lost, as is often the case in opening the discussions of the clinics.

The morning of May 17 was devoted to a number of interesting clinics; Dr. C. A. Darling illustrated the application of the rubber-dam, showing the use of the clamp in its various forms, together with silk ligature, and the advantage of moistening with soap the holes made for the teeth. Dr. W. E. Burkhart inserted a cohesive gold filling with the electric mallet, demonstrating rapid and perfect condensation without injury to the enamel margins. Dr. C. A. Holmes constructed a jacket crown for use on anterior teeth where the pulp had not been devitalized, using a porcelain facing and a gold cap. Dr. B. F. Eshelman showed an interesting method of making a banded Logan crown without investing it, and its peculiar adaptation to superior lateral incisor roots.

At the afternoon session the following new members were elected: Drs. D. I. Burkhart, J. D. White, E. E. Gleason, F. W. Reese, M. D. Thurston; and the following papers were read: "The Physician and the Dentist," by

Dr. A. B. Bailey, of Oregon, who was made an honorary member. He urged that since dentistry was coming more and more into the domain of medicine and surgery, a better feeling and understanding should exist between the two professions. The dentist should be able to detect certain diagnostic signs and refer all patients needing treatment to a physician. As most physicians are deplorably ignorant concerning dental disorders and their sequellae, general articles on dentistry should be sent to the medical journals for publication. "Soft Gold Foil Lining for Amalgam Fillings," by Dr. O. M. Graves. "Our Obligations to Our Patients," by Dr. J. E. Banks. This paper was a plea for more conscientious work and a fuller recognition of the skill due our patients. In the evening the society listened to a paper on enamel formation by Dr. B. S. Scott, illustrated with a stereoptican exhibition of the slides of Dr. J. Leon Williams of London, showing the extraneous causes of caries; at the conclusion of which a vote of thanks was given Drs. E. C. Kirk and M. H. Cryer, through whom the society was enabled to get the slides.

The morning session of May 18 was devoted to clinics, among which were the clinics of Dr. P. H. O'Connor, who extracted a tooth without pain from a patient under hypnotic suggestion; and of Dr. B. S. Scott, who demonstrated the use of silk ligatures for regulating purposes and binding teeth loosened by pyorrhea. The president named Drs. C. A. Holmes, B. F. Eshelman, W. E. Burkhart, P. H. Carlyon, E. D. Andrus and B. S. Scott as delegates to the National Association at Omaha.

The officers elected for the ensuing year are: Dr. P. H. Carlyon, Olympia, Pres.; Dr. W. E. Burkhart, Tacoma, First Vice Pres.; Dr. J. N. Prather, Seattle, Second Vice Pres.; Dr. J. E. Banks, Treasurer, and Dr. D. I. Burkhart, Seattle, Sec'y.

The meeting was attended throughout by a feeling of good-fellowship and the discussions were animated. It was a good sign to see the younger members of the profession present and taking an active part in the meetings, showing that as the old guard drop away there will be new blood in the ranks to carry on the work with renewed vigor. B. S. SCOTT.

News Summary.

THE OCCASIONAL SOAKING of rubber articles in a 8 per cent solution of carbolic acid will prevent the rubber from becoming rotten.—*Ex.*

DENTISTS FOR THE ARMY.—Representative Otey of Virginia has introduced a bill into Congress providing for the appointment of a brigade dentist for each brigade, with the rank of major, and for each regiment, with the rank of captain.

TIME FOR ADMINISTERING MEDICINES.—Alkalins, before meals; acids, between meals; irritating toxic substances, immediately after meals. Phosphates and malt extracts should be taken with the meals, and sublimate, tannin and alcohol only when the stomach is completely at rest.—*Tribuna Med.*, Feb. 28.

OBJECT OF ALL QUESTIONS TO EXPERTS.—The object of all questions to experts, the supreme court of appeals of West Virginia says, in the late case of State vs. Musgrave, should be to obtain their opinion as to matters of skill or science which are in controversy, and at the same time to exclude their opinions as to the effect of the evidence in establishing controverted facts. Although an expert may have heard all the testimony in the case, he can not, continues the court, be asked to give his opinion, based merely upon his having heard such testimony in the case, whenever there is a conflict therein, unless the same is hypothetically propounded to him. An expert can not be asked to give his opinion on doubtful facts in the case on trial, which remain to be found by the jury, but a similar case may be hypothetically put to him, based upon the evidence in such case. Where the inquiry relates to a subject which does not require peculiar habits of study in order to enable a man to understand it, the opinion of skilled or scientific witnesses is not admissible.

RESPONSIBILITY FOR MALPRACTICE.—A French court at Valence has decided that, as a physician is not infallible and does not profess to be so, an error on his part as to the dose of a remedy, even when proved, does not necessarily involve responsibility for malpractice. A lady of Valence, before submitting to the treatment advised in her case by a local physician, consulted Dr. Z—— of Lyons, who in a note addressed to the local practitioner suggested injections of cyanid of mercury of a strength of 0.75 to 1000. The local physician considered the dose too weak and prescribed a solution of a strength of three-fifths of a grain of cyanid of potassium to one hundred and fifty grains of distilled water. The doctor gave two injections. The patient suffered severe pain, but after several weeks the affected parts returned to their condition before the treatment without any amelioration. When the doctor sent in his bill, the lady's husband not only refused to pay, but brought suit against the physician for damages for injury done to his wife. The court having ordered damages to be paid, the doctor appealed to the civil tribunal of Valence, which reversed the verdict, with the above-named result.—*Medical Age.*

NEW PERIODICALS: A PROTEST.—Nine new German medical periodicals were announced in the last months of 1897, and medical literature in other countries is almost equally prolific. Von During writes to the *Deutsche Medicinische Wochenschrift*, protesting against this multiplication of professional organs as a waste of energy, time, and money, rendering it impossible for any one to keep an intelligent oversight of medical literature. "Each new journal," he says, "contains possibly one or two important articles during the year, but these might just as well have been contributed to some established journal. The rest of the contents—news, abstracts, etc.—are found almost simultaneously in all the leading established journals." He therefore appeals to his confreres not to allow themselves to be cajoled into lending their name and prestige or contributing to these sprouting journals. If they will take *Punch's* advice to those about to marry, "Don't?" they will save the rest of the profession much time and money, while maintaining the

dignity of science, which will inevitably be impaired by the "*Vielschreiberei*" necessitated by a host of new periodicals. And the new publications, refused the name and support of prominent members of the profession, would "die a-borning."—*Jour. of Am. Medical Assn.*

THE PATHOLOGY (SHANG-HAN) OF THE CHINESE is very incomplete. All diseases, especially epidemic diseases, are ascribed to spirits and winds, and cold and warm humors, etc., are assigned in accordance with their benign or malign character to Yo (the good principle) or Yu (the evil principle). To Yo belongs acute inflammatory fever; to Yu, hectic fever, etc. There are, according to Chinese pathology, 10,000 varieties of fever. They imagine there is a distinct and different pulse in every part of the body. They "play upon" the pulses as is done in playing the piano, where we feel it. In this practice the changes of the moon and the season of the year are considered. The performance often lasts several hours in the "heavenly spot" (the upper part of the carotid artery), or on the "earthly spot" (near the ankle), or the "human spot" (at the wrist), with three fingers—sometimes on the right arm, sometimes on the left, now higher up, now lower down, now on one side, again on both sides, etc. The three fingers used are the index, the middle and the little finger. Deyuse, the index finger, indicates the spirits of the liver; Quan, the middle finger, the spleen; and Shaker, the little finger, the heart. In diseases of the heart the left pulse is investigated, in those of the liver the right. Each speck of the tongue and every discoloration of the organ points to special diseases and viscera. Thus a red tongue indicates warmth of the heart, and the south; a white tongue, the lungs, and the west, etc.—*Medical Age.*

POWER OF RESISTANCE IN THE RABBIT SOBER AND THE RABBIT DRUNK.—Dr. Thomas of Strasburg published some years ago the results of giving rabbits alcohol and then inoculating them with comma bacilli. He found that the quantity required to kill an alcoholic rabbit was one-sixth of that necessary to finish a *sober* rabbit. In what manner the bactericidal resistance of the blood was lessened naturally led Dr. Thomas to undertake some experiments to determine the action of narcotics upon the constituents of the blood. These he has lately published in the *Archiv fur Experimentelle Pathologie* of March 17, 1898, as follows: In acute alcoholic intoxication the alkalescence of the blood was reduced in some cases one-half. It seems therefore that during alcohol narcosis there is an acid which supplants to a greater or lesser extent the CO_2. The author believes it to be a volatile fatty acid; its exact nature he could not determine. In some cases the red blood-corpuscles were diminished, but this was not a constant factor. After subcutaneous injections of ether, morphin and chloroform the amount of oxygen in the blood was lessened, but the CO_2 and alkalescence remained very little unchanged. After inhalation of ether the CO_2 was increased, the oxygen lessened, and the alkalescence not changed; while the number of red blood corpuscles was apparently doubled. The explanation is that the supply of air was shut off by the inhalation mask and the arterial blood became venous and thickened in character.

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LISTERINE is used in various degrees of dilution. One to two ounces of LISTERINE to a pint of water will be found sufficiently powerful for the general care of the deciduous teeth of children, whilst a solution composed of one part LISTERINE and three parts water will be found of agreeable and thoroughly efficient strength for employment upon the brush and as a daily wash for free use in the oral cavity, in the care and preservation of the permanent teeth.

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Card.

DENTISTS in all parts of the United States have been writing us recently regarding the revised and greatly improved edition of Dr. Colburn's pamphlet on the care of the teeth which was announced some time ago.

This edition—one million copies, with illuminated covers—has been unavoidably delayed, but is now in the press and will be ready for distribution to dentists on or about July 1, proximo, when all applications we have in hand at that time will be promptly honored, with our compliments.

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INVALUABLE as a mouth-wash and as a cleansing agent for the teeth. Destroys pus, blood-stains, and green-stains on the teeth. We would call special attention to the fact that **Pyrozone 3 per cent Solution** is of the strength ordered by the United States Pharmacopeia. Aqueous solutions of a higher strength are placed on the market by various makers, but these contain, of necessity, excessive amounts of acids and other preservatives, and are extremely liable to violent decomposition. Where a stronger preparation is required, it should be extemporaneously prepared by shaking the strong ethereal solutions of Pyrozone with water.

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INVALUABLE for bleaching teeth and for topical applications in Pyorrhea Alveolaris. Pyrozone 25 per cent is also an excellent hemostatic. By shaking two parts of Pyrozone 25 per cent Solution with one part of water and separating the mixture through a funnel, an aqueous 25 per cent Solution can be prepared in a few minutes. This can be diluted to any strength required. Weaker Ethereal Solutions can be prepared by simply diluting the 25 per cent Solution with the requisite amount of pure sulphuric ether.

NOTE—To open tubes of Pyrozone 25 per cent Solution, wrap the tube in a cloth and nip off the top with a pair of forceps having concave beaks. Do not hold the tube in the open hand, as the warmth of the latter is sufficient to boil the ether and so cause pressure to develop.

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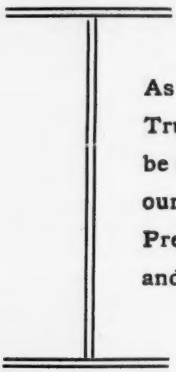


As this cement is controlled by the Trust, and we shall therefore not be able to secure any more, we offer our stock on hand at a reduction. Prepared in five tints—dark, medium and light yellow, blue and brown.

Trust Price, $2.00 per packet.

Our Price, $1.50

ROSE'S CONTINUOUS GUM MATERIAL

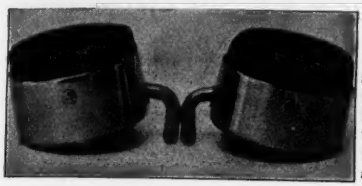
We would say the same about this article.

	Trust price.
Rose's Gum Body, low fusing, per packet,	$2.00
Our price,	$1.50
Rose's Gum Enamel, low fusing, per packet,	2.00
Our price,	1.50
Rose's Treatise on Continuous Gum Work,	.50
Our price,	.40

DENTAL PROTECTIVE SUPPLY CO.

1101-3 Champlain Building, Chicago.

THE UNIQUE DENTAL FULCRUM



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NO TUG OR PULL. Just snap the Fulcrum on your dental forceps, then apply the forceps to the teeth in the usual way, but **don't pull.** Simply **PRESS ON THE FULCRUM.** This will extract **ANY TOOTH,** upper, lower, front or back, with the utmost **EASE** and **SAFETY.**

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TROY PRESCRIPTION SCALE

For Dentists and Physicians

SIMPLE, NEAT, ACCURATE, DURABLE

Price by Mail, including Spatula, $1.00

CAPACITY
FROM
1-2 TO 24 GRAINS

The little scale above illustrated is constructed on scientific principles and is *absolutely correct.* The knife edge bearing or fulcrum is made of steel, so that it cannot become worn or damaged by use. By means of a simple contrivance, a hair balance may be easily and quickly secured. Dentists will find the scale convenient for weighing mercury and alloys, for making definite solutions of drugs, weighing precious metals and numerous other uses in the operating room and laboratory. Physicians who habitually dispense their own drugs, or who may be called upon to do so in an emergency, will find the scale perfectly reliable and almost indispensable. It is beautifully finished, nickel plated, and packed in a neat box ¾ in. x 1¾ in. x 4⅝ in., and may be easily slipped into the pocket.

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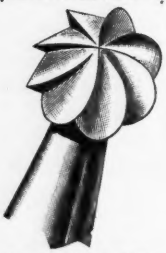
"DUAL BLADE" BURS

Will cut faster and cleaner than any others.

(SELF-CLEANSING)



Patented Feb. 5,'95.

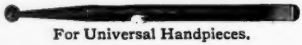
Patented Feb. 5,'95.

The twin blades traverse the entire cutting surface of the bur.

These burs **clear themselves** when in use, enabling the operator to work rapidly, and they **shave, not grind,** the dentin.

These are the burs which made other houses **cut the price.**

WHEN ORDERING PLEASE STATE THE STYLE REQUIRED.



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For No. 2 Right Angle Attachment.

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